

# TERRA COTTA

## STANDARD CONSTRUCTION

REVISED EDITION

NATIONAL TERRA COTTA SOCIETY  
U.S.A.

721.9  
N277a  
1927  
c.2

Roy W. Whelby.





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## · STANDARD · CONSTRUCTION

REVISED EDITION

NATIONAL  
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1927

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## Introduction

The present volume is a revision of Architectural Terra Cotta—Standard Construction, originally published in 1914.

Like the previous issue, this edition does not presume to suggest architectural design. It shows illustrative architectural forms of assumed proportions, and their proper constructional features. It shows the correct use of Terra Cotta. For a number of examples several good solutions of the structural problems are possible. Variations in size of similar sections sometimes necessitate radical changes in both jointing and construction.

The changes made in this revision are the result of a more extended experience in manufacturing and in modern building methods, and are based on a careful study of the behavior and weathering properties of exterior building materials.

The following are the most important of the structural principles upon which this revision has been developed:

*Shelf Supports* In concrete or steel frame buildings, the veneer or facing material should be fully and continuously supported, at each floor level on shelf supports, of adequate strength and stiffness, rigidly connected to the structural frame. Steel shelf angles or supports, in all cases, should be located in mortar joints. The strength of the Terra Cotta should not be unnecessarily reduced by cutting the webs to receive the steel.

*Expansion Joints* Proper provision should be made for expansion joints, at shelf supports, over column caps, etc., to prevent the development of disruptive stresses caused by deflection, wind pressure, temperature changes, settlement and like forces.

*Terra Cotta on Concrete Frames* The volume changes incident to the setting and hardening of concrete, and the variations in volume of concrete due to humidity and temperature conditions, require provisions to allow free movement of the supporting frame and make it undesirable to completely fill a facing applied to a concrete structure.

*Protection against Corrosion* Proper care should be exercised to prevent the corrosion of all steel supports, ties, etc. Where such protection cannot be permanently secured through encasement with mortar or concrete, or through the use of corrosion resistant metallic coatings, non-corrosive metals should be employed.

*Free-standing Construction* Exposed free-standing construction, subject to the absorption of water through mortar joints and liable to injury from subsequent freezing, or the expansion of improper filling material, should generally be left unfilled and should be ventilated by means of small, inconspicuously placed weep-holes (indicated by W. II. on the plates).

*Flashing and Drips* Properly constructed flashing should be provided to cover the top of large projecting horizontal courses, the backs and tops of parapet walls, wide-exposed sill courses, etc., and all projecting features should have drips.








## Terra Cotta

*A brief synopsis of the manufacture of Terra Cotta*

- Drawings** The architect's complete scale drawings and steel framing plans are furnished the manufacturer, who, following the design, makes scale shop drawings showing the jointing and construction, and full size details to the proper shrinkage dimensions. These drawings are submitted to the architect for approval before proceeding with the work.
- Models and Moulds** Full size models to shrinkage scale are made of plaster for each different shape shown on the shop drawings. Over these models sectional moulds of plaster are cast, from which later the required number of pieces of Terra Cotta are produced.
- Decoration** From the architect's drawings or sketches, in the style and period indicated, modelled ornament is applied in clay to the face of the plaster models. Photographs of the ornamental models are submitted to the architect for approval or he may personally examine these models at the factory—the soft clay permits of such corrections or improvements which may be desired.
- Clay** The mixture of clays and fusible minerals used in forming the Terra Cotta is carefully selected and proportioned to give the desired degree of plasticity and a composition which, when fired at high temperatures, will produce a homogeneous body, amply strong to carry the required structural loads.
- Pressing** The foregoing processes are preparatory to actual production, the first step of which is pressing. This is a manual operation and consists of pressing the plastic clay into the mould. The walls of the pieces should not be less than one inch thick, following the contour of the mould, and the partitions should be of such thickness and so spaced as to perform their proper functions with regard to form and structure. The pressed piece remains in the mould until the clay stiffens. It is then removed from the mould and is skillfully retouched. Then it is placed in driers, where the moisture is evaporated.
- Color** From the drying process, the Terra Cotta passes into the spraying department where, by means of compressed air apparatus, the exposed surfaces are coated with the ceramic mixture which, during the firing process following, develops into the desired color or glaze.  
These colors or glazes are prepared with scrupulous care, according to exact ceramic formulae. The variety of shades and textures which may be obtained opens up an unlimited field of permanent color design in architecture.
- Firing** Following the coloring process, the Terra Cotta is fired in kilns where it is subjected to a temperature rising gradually to 2,000 degrees Fahrenheit or more, depending upon the temperature and maturity of the clay and glaze. After proper firing, the kiln is allowed to cool slowly to normal temperature, an operation that causes a slow annealing of the Terra Cotta.
- Terra Cotta is usually fired in periodic muffle kilns. In recent years, the tunnel kiln has been developed for the firing of Terra Cotta. In the latter type of kiln the Terra Cotta is set or loaded on cars, which travel through a long heated tunnel.
- Fitting** From the kiln, the Terra Cotta is removed to the fitting department, where it is laid out and marked to correspond with the piece numbers shown on the shop drawings. It is also marked to indicate the position it is to occupy in the building. Where required, the joints are squared, or cut to proper alignment and size, either by hand or grinding. Careful fitting is essential to assure satisfactory results in the erected Terra Cotta.
- Shipping** For rail transportation, Terra Cotta is usually shipped in bulk, securely packed in hay and braced to prevent shifting.  
Upon arrival at the building site, the hay should be removed and the Terra Cotta placed in the order marked, in piles on wooden strips.
- For export by vessel, the Terra Cotta is usually packed in boxes or crates, according to the special conditions encountered. Another method that has been found to be economical and entirely satisfactory is to ship the Terra Cotta loose after it has been wrapped and tied in corrugated cardboard.
- Erection** The appearance of erected Terra Cotta is greatly affected by inaccurate setting and defective pointing of the mortar joints. As the individual pieces of Terra Cotta have been carefully fitted and numbered to correspond with the erection drawings, the PIECES MUST BE ERECTED IN ACCORD WITH THE NUMBERS THEREON if satisfactory results are to be secured.
- Time** The Terra Cotta manufacturer will contract to submit shop drawings for approval within a fixed time after receipt of the architect's drawings and other required information. All shipping dates are computed from the date of receipt by the manufacturer of architect's approval of shop drawings and complete data on color and texture desired. Work cannot be definitely scheduled for production until all essential information is on hand. The process of manufacture may take from six to ten weeks, depending upon the size and architectural character of the order.
- Specification and Contract** A Standard Specification for the Manufacture, Furnishing and Setting of Terra Cotta and a standard form of contract have been adopted by the NATIONAL TERRA COTTA SOCIETY. They are recommended for general use. A copy of either may be secured by addressing the Society. The specifications are incorporated in this volume.

*Terra Cotta factories are conveniently located in the Eastern, Central and Western sections of the United States (see list in back of this volume). All of the Society's membership will be glad to have any architect or designer interested in the processes of manufacture of Terra Cotta visit their plants.*



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**ENTRANCE**  
WITH ENGAGED COLUMNS  
WITH SEGMENTAL PEDIMENT  
WITH EUSTICATED ASHLAR

ENGAGED COLUMNS SHOULD BE JOINTED AT WALL  
AT POINT OF ENGAGEMENT TO PREVENT INTERNAL  
SHRINKAGE AND TO ALLOW ADJUSTMENT IN ALIGNMENT

PLAN  
THRO' NECK OF COLUMN  
LOOKING UP

ELEVATION

SCALE "ONE HALF" INCH EQUALS ONE FOOT

RUSTICATION ON COLUMNS TENDS TO  
CONCEAL HORIZONTAL JOINTS AND  
PREVENTS OR LARGER DRIVES WITHOUT VERTICAL JOINTS

STRUCTURAL STEEL TO BE PROTECTED  
FROM CORROSION BY PAINTING WITH  
ZINC OIL OR PAINT

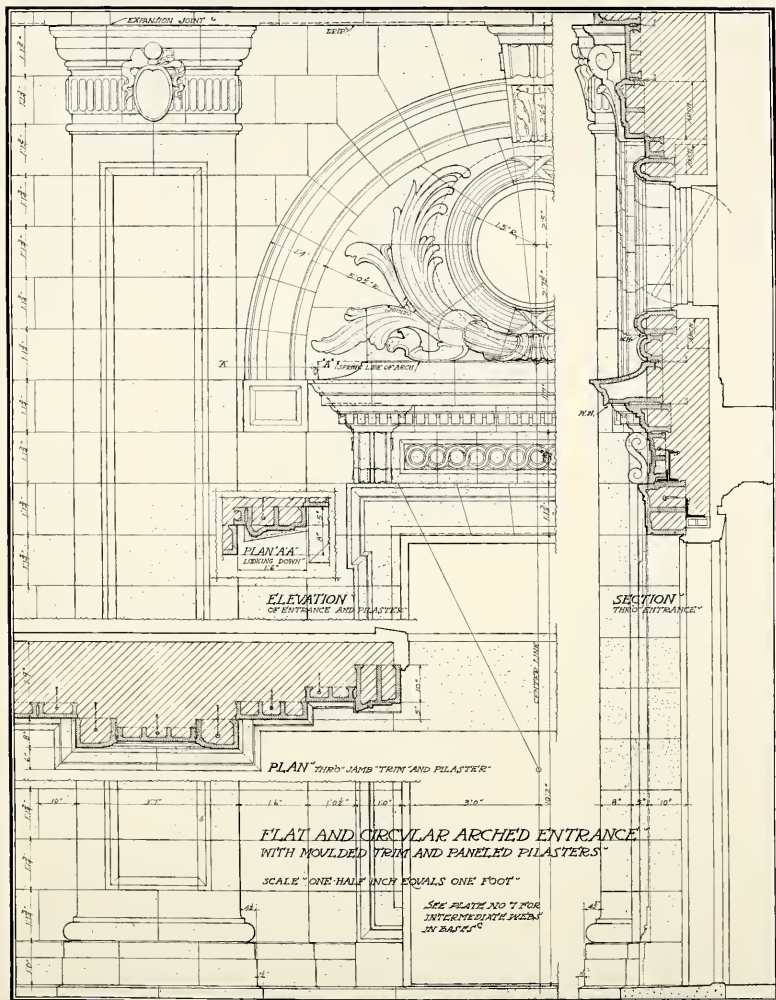
SECTION  
ON CENTER LINE

JOINTS ADJUSTED VERTICALLY  
TO ALLOW ADJUSTMENT  
IN ALIGNMENT IN SETTING  
SEE PLAN

SEE PLATE NO. 7 FOR  
INTER-MEDIATE PARTS  
IN DETAILS

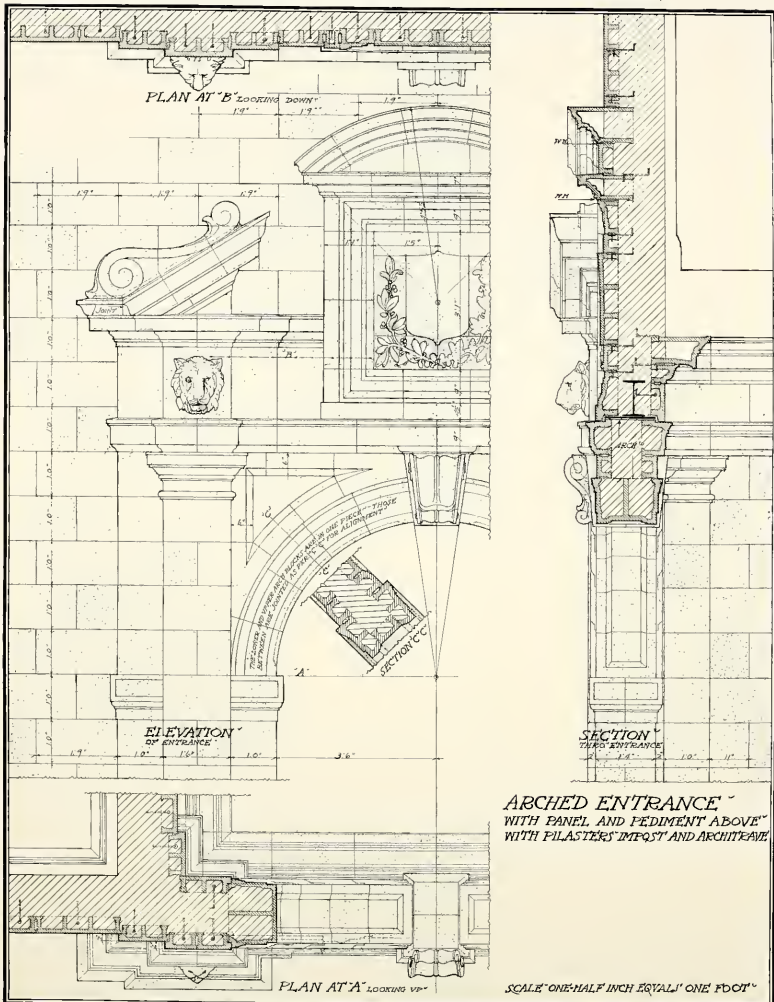


**TERRA COTTA · STANDARD CONSTRUCTION**





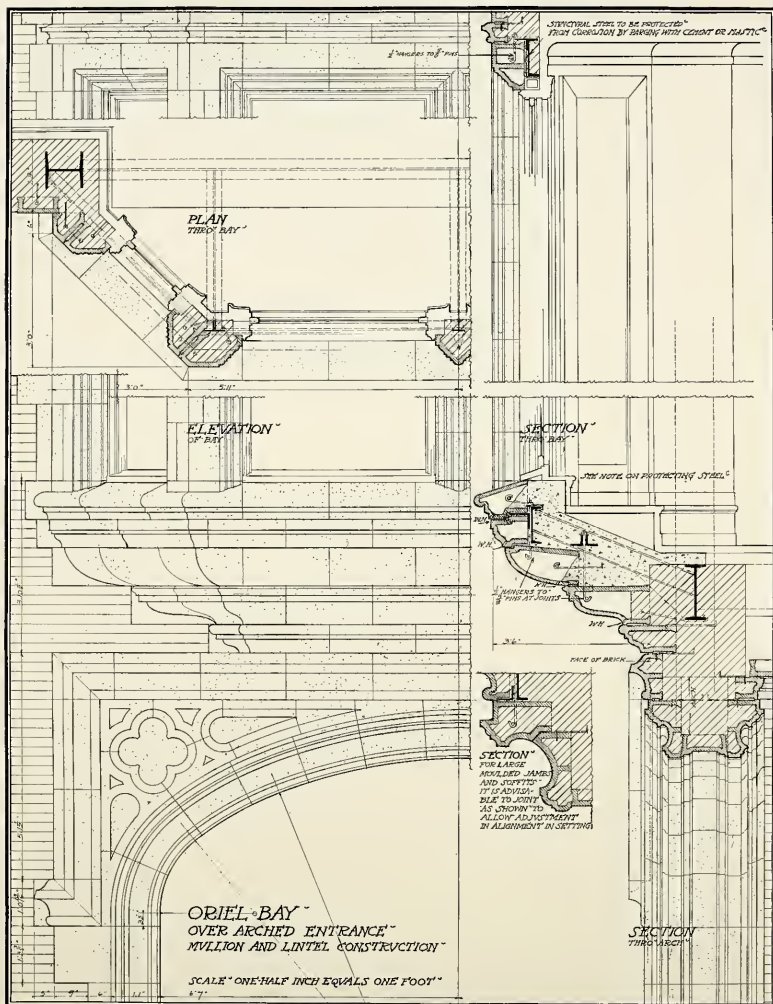
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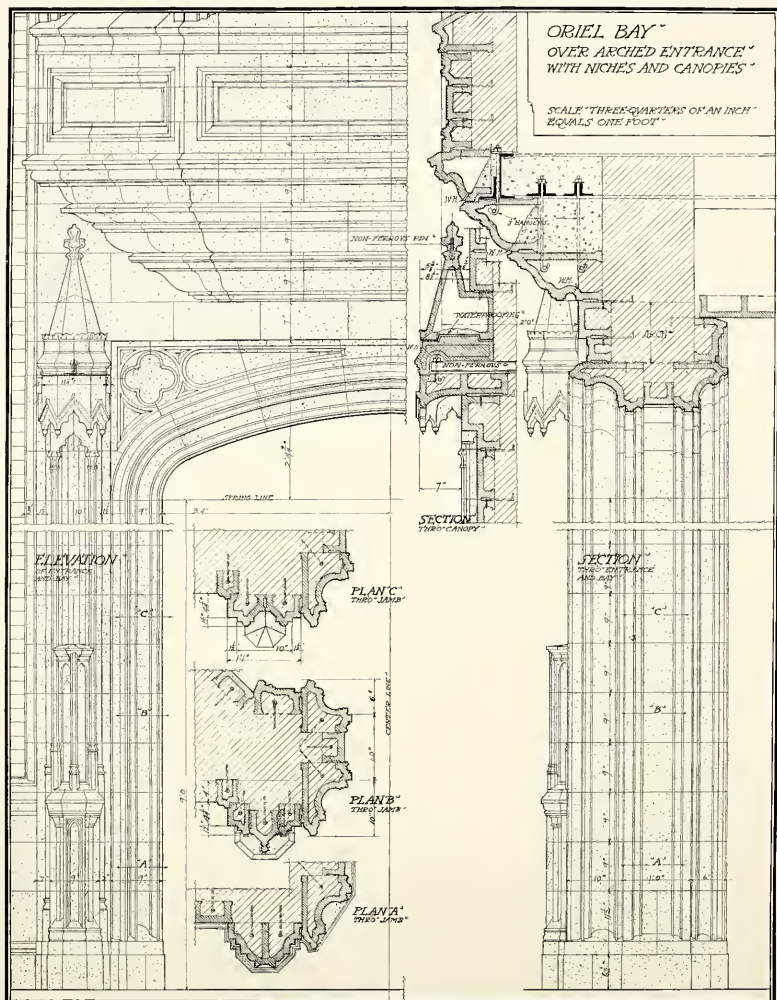




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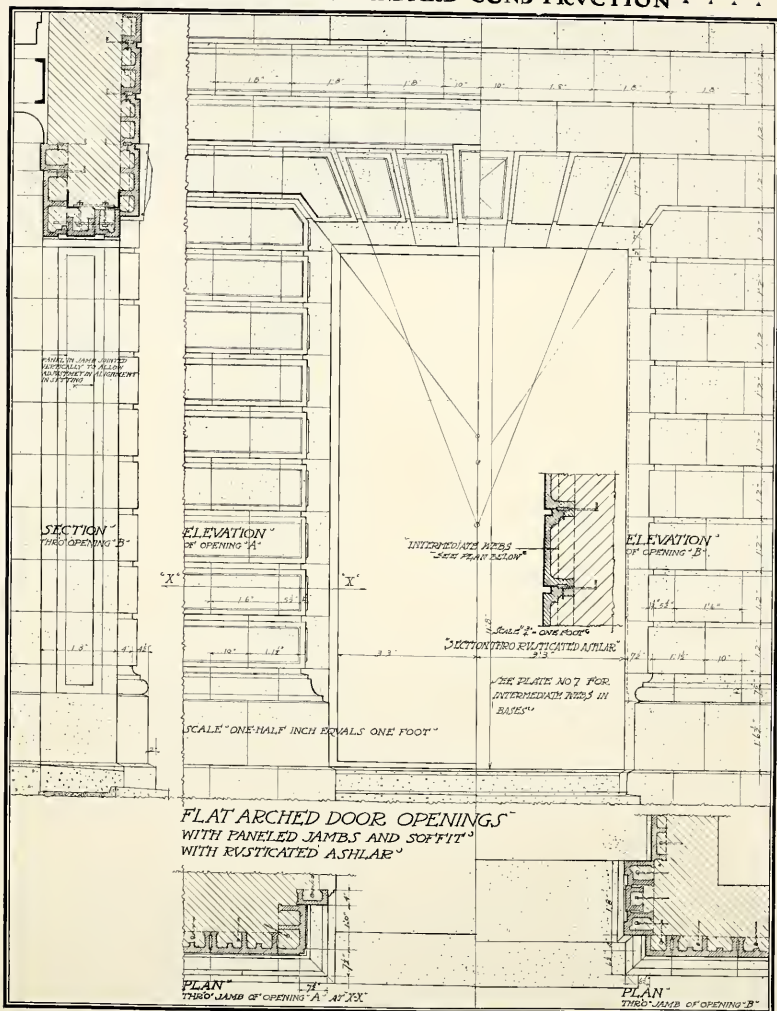








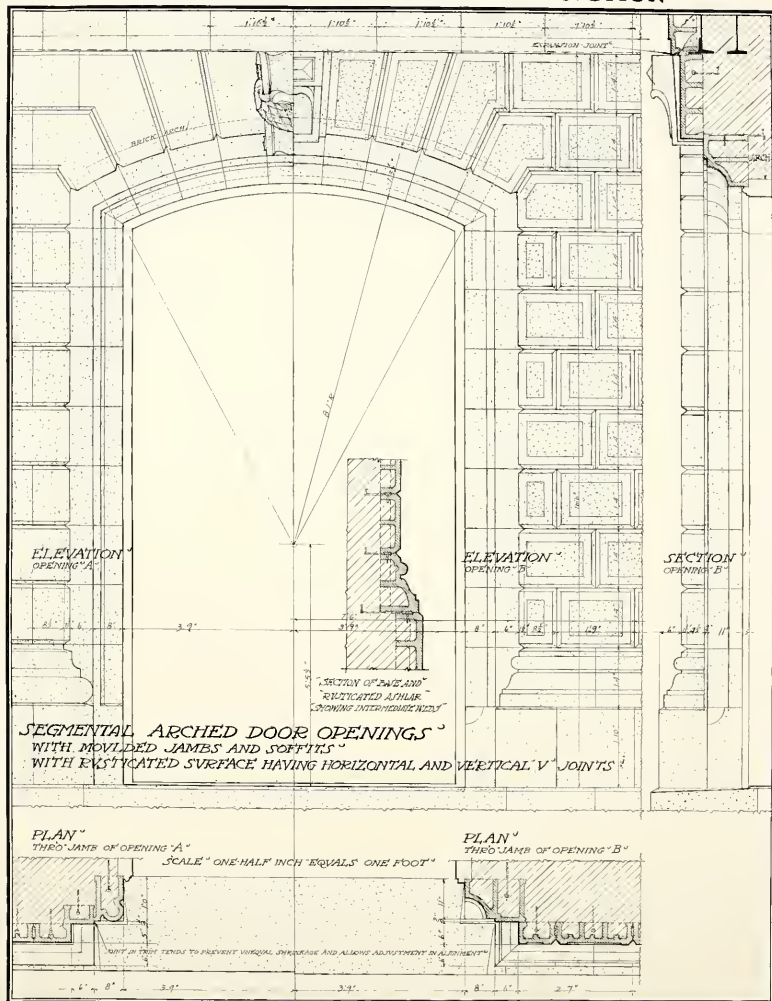
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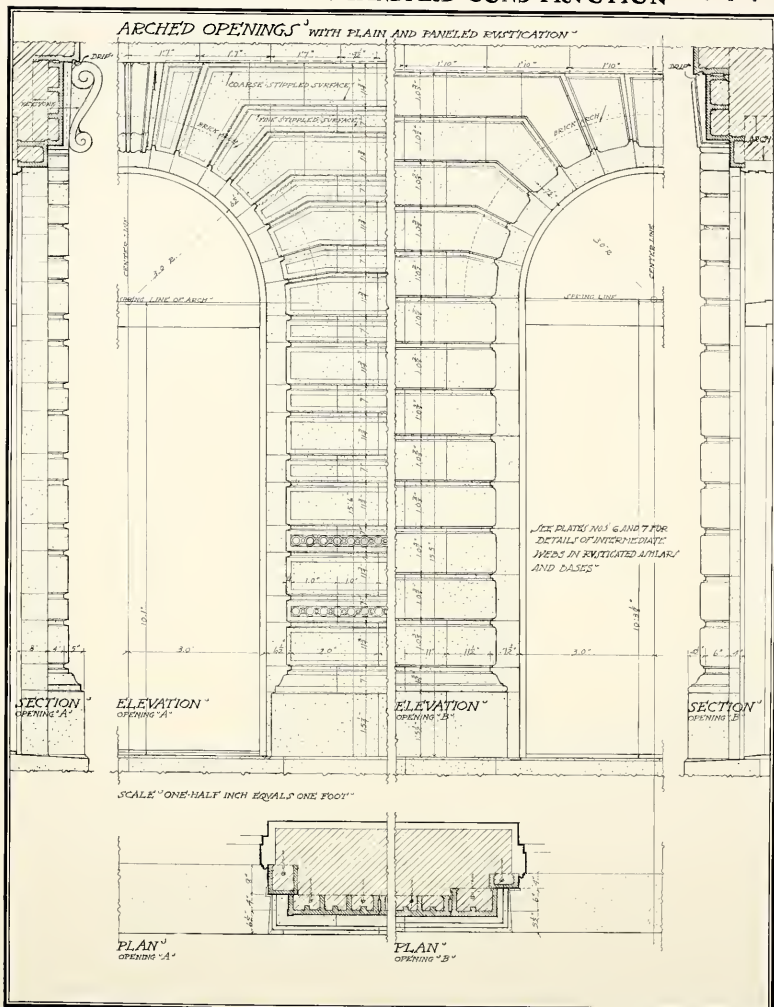


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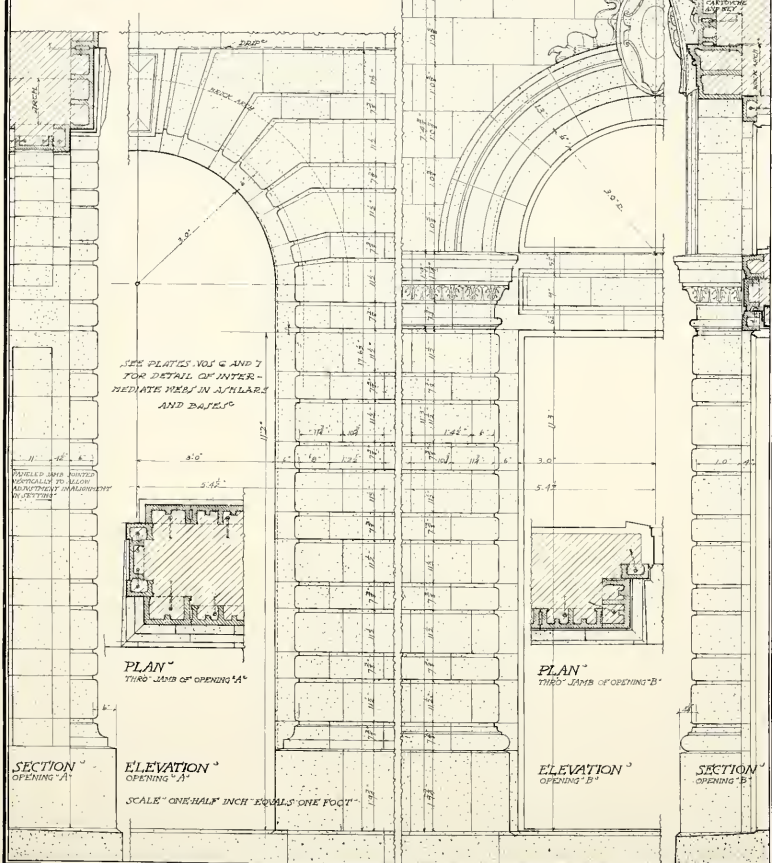
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**ARCHED DOOR OPENINGS  
WITH EUSTICATED ASHLAR  
WITH TRANSOM LINTEL**

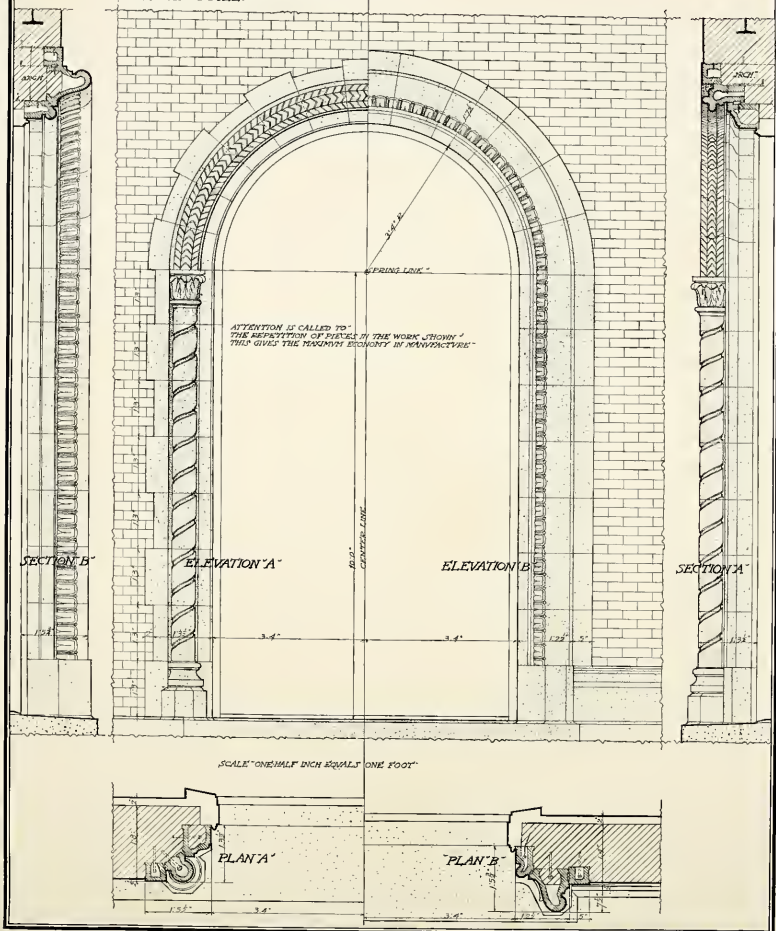
SHOWING JAMB AND LINTEL CONSTRUCTION  
MOULDED IMPOST AND ARCHITRAVE  
WITH CARTOUCHE





▲ ▲ ▲ ▲ TERRA COTTA STANDARD CONSTRUCTION ▲ ▲ ▲ ▲

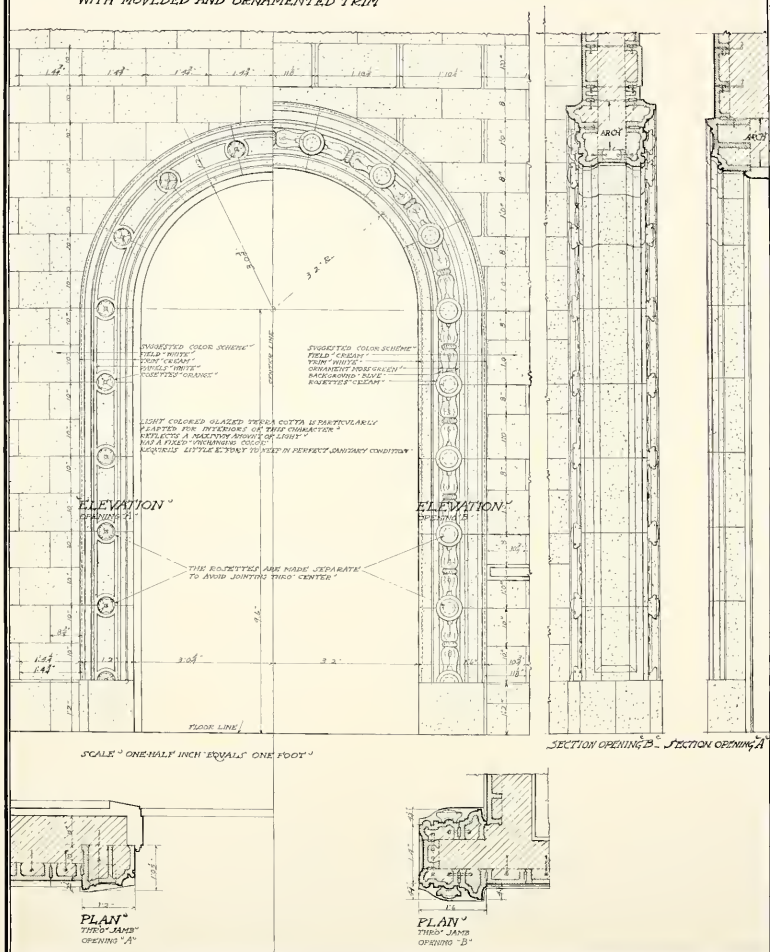
ARCHED OPENINGS  
WITH MOULDED AND ORNAMENTED TRIM  
WITH BRICK FIELD







ARCHED OPENINGS  
WITH MOULDED AND ORNAMENTED TRIM





▲ ▲ ▲ TERRA COTTA STANDARD CONSTRUCTION ▲ ▲ ▲

BALCONY CONSTRUCTION  
WITH CONCRETE PLATFORM  
WITH ARCHED OPENING BELOW AND  
WINDOW ABOVE

PLAN  
ABOVE BALCONY  
LOOKING DOWN

1/2" CLEAR - NON-FRIGIDITY

2" x 2" ANCHORING RODS IN  
CONCRETE

SECTION  
THROUGH BALCONY

ELEVATION  
FRONT OF BALCONY

ELEVATION  
SIDE OF BALCONY

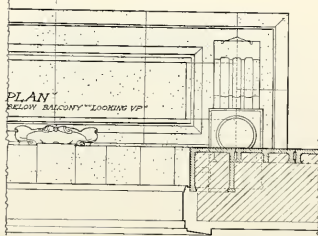
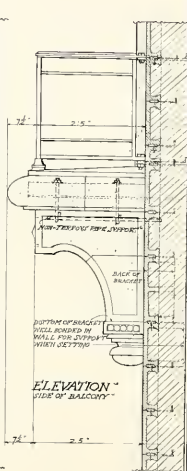
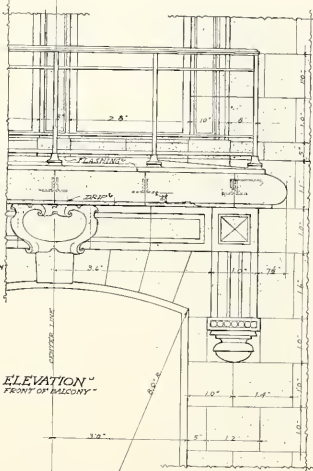
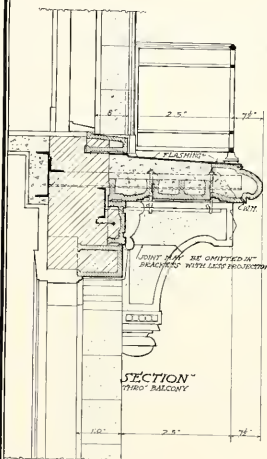
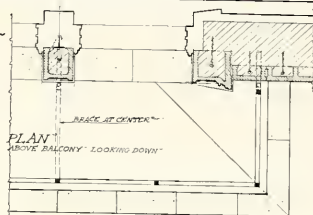
SCALE "ONE HALF INCH EQUALS ONE FOOT"

PLAN  
BELOW BALCONY  
LOOKING UP

SECTION  
TRANSVERSE THIRD BALCONY



BALCONY CONSTRUCTION  
WITH CONCRETE PLATFORM  
WITH SEGMENTAL ARCH UNDER  
AND WINDOWS ABOVE





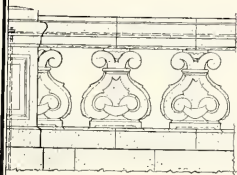




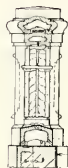


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BALUSTRADES<sup>c</sup>  
PARAPETS<sup>c</sup>



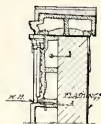
ELEVATION



SECTION

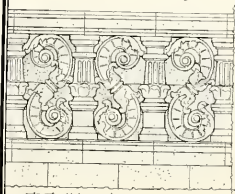


ELEVATION

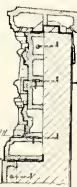


SECTION

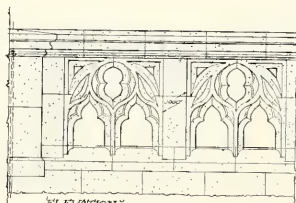
SCALE "ONE HALF" INCH EQUALS ONE FOOT



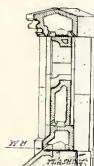
ELEVATION



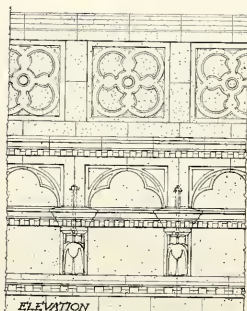
SECTION



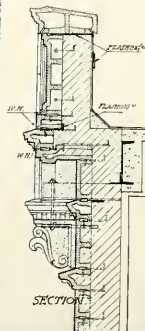
ELEVATION



SECTION



ELEVATION  
OF CORNICE AND BALUSTRADE

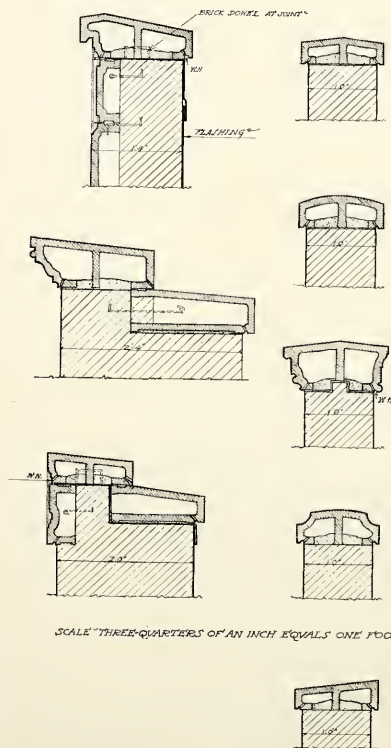


SECTION

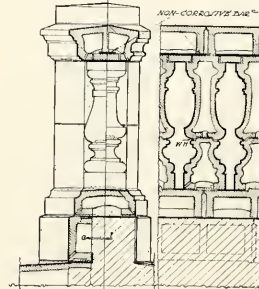
IN BALUSTRADES WITH SOLID BACK THE USE OF DARK  
COLORS IN THE FIELD OF PANELS WILL GIVE THE  
APPEARANCE OF TEXTURED WORK



*WALL COPINGS AND BALUSTRADES  
SHOWING VARIOUS METHODS OF JOINTING AND ANCHORING*



TERRA COTTA COPING WITH "BENTON BALUSTRADE" CONSTRUCTION

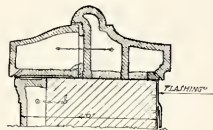
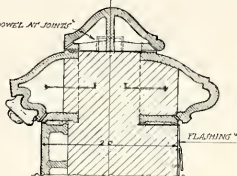


WHILE TERRA COTTA ARCHES ARE USED TO FORM PARAPET WALLS, THIS ARCHES SHALL BE LEFT UNFILLED AND SUPPLIED WITH WEED HOLES



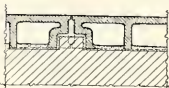
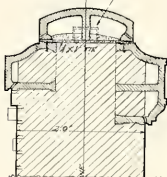
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BRICK DOWEL AT JOINT

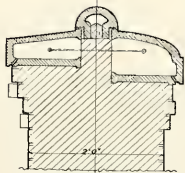
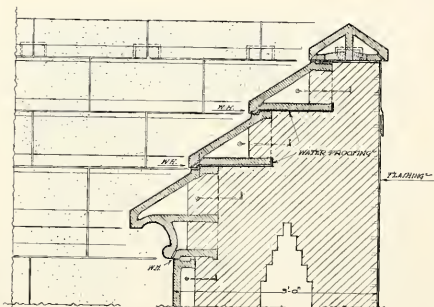


SCALE—THREE-QUARTERS OF AN INCH EQUALS ONE FOOT

BRICK DOWEL AT JOINT



SECTION THROUGH BRICK DOWEL AT JOINT



THE PROFILE OF EACH COPING IS VARIOUS BOTH SIDE OF CENTER LINE FOR INTERSECTING CONCRETE

WHERE TERRA COTTA ANCHOR LIES TO FACE THICKET WALL, THE ANCHOR SHALL BE LEFT BOTTLED AND PROVED FROM INSIDE

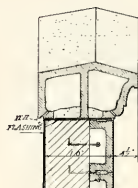
### COPINGS

FOR WALL 2'0" AND MORE THICK  
SHOWING VARIOUS METHODS OF JOINTING AND ANCHORING

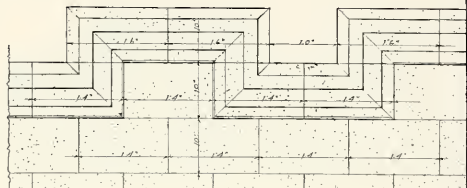




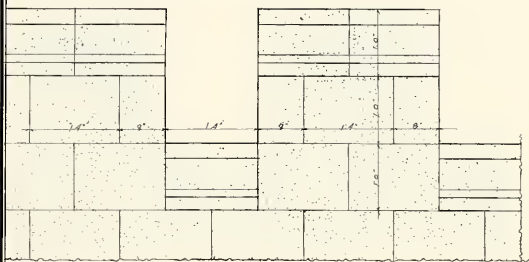
BATTLEMENTED COPING AND SET-OFFS



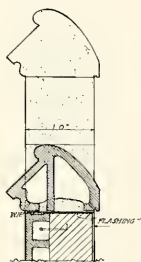
SECTION  
THREE COURSE "A"



ELEVATION  
OF COPING "A"

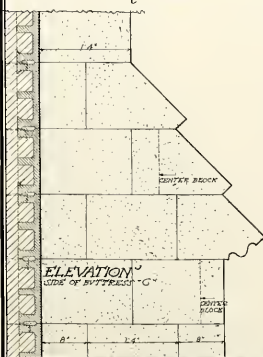


ELEVATION  
OF COPING "B"

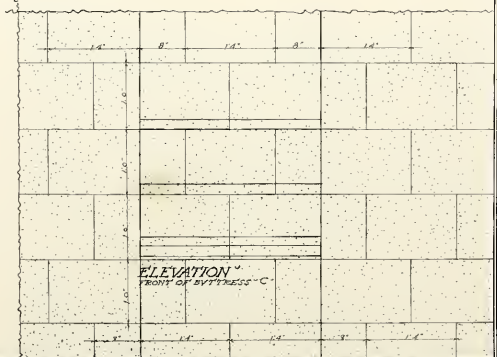


SECTION  
THREE COURSE "B"

SCALE "THREE QUARTERS OF AN INCH EQUALS ONE FOOT"

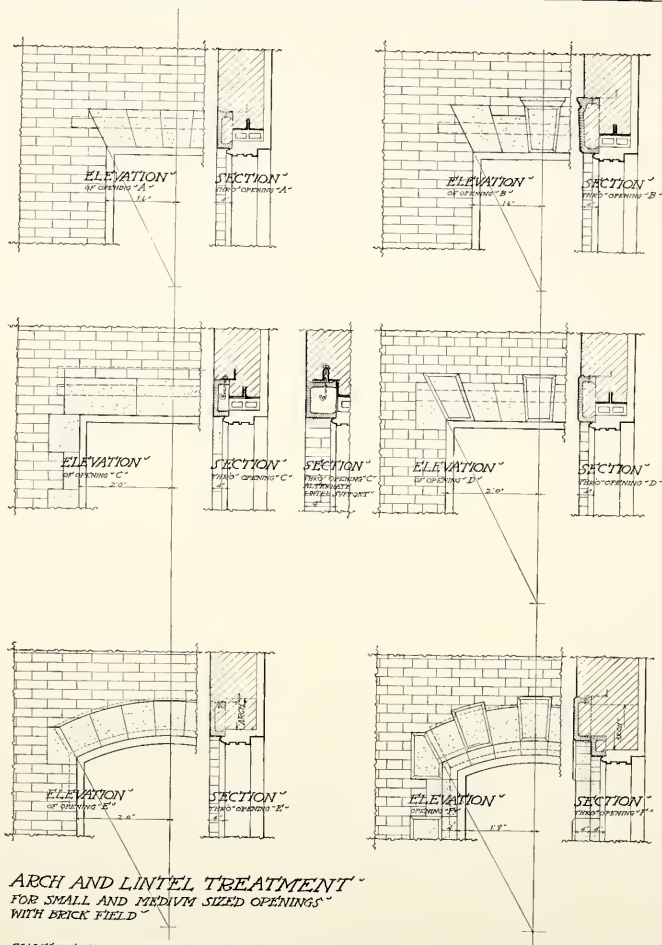


ELEVATION  
SIDE OF BATTLEMENT "C"

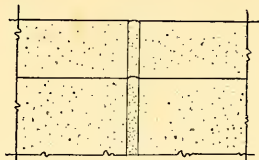


ELEVATION  
FRONT OF BATTLEMENT "C"

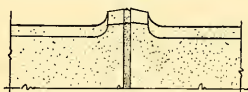




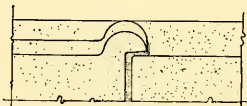
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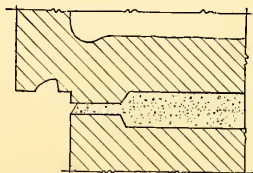
"STANDARD FLUSH JOINT" RECOMMENDED AS  
SUPERIOR TO THE OLD STYLE RAISED AND  
ROLL JOINTS SHOWN BELOW



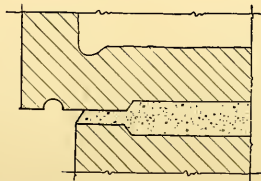
OLD STYLE RAISED JOINT



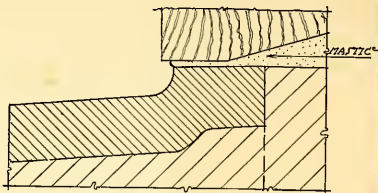
OLD STYLE ROLL JOINT



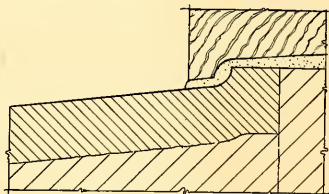
TYPICAL DRIP DETAILS



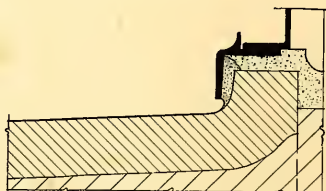
SCALE: HALF AND QUARTER FULL SIZE



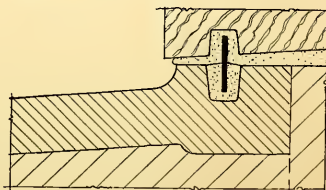
WOOD OR HOLLOW METAL SILLS



TRACK UNDER SILL

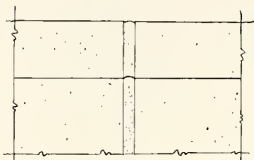


SILL FOR SOLID METAL FRAMES

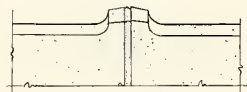


SILL WITH NON-FERROUS WATER BAR

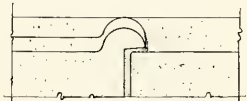
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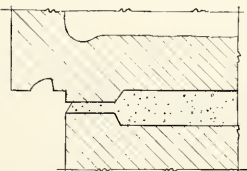
"STANDARD FLUSH JOINT" RECOMMENDED AS  
 SUPERIOR TO THE OLD STYLE RAISED AND  
 ROLL JOINTS SHOWN BELOW



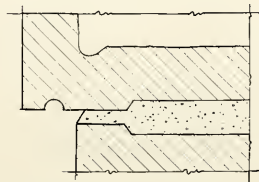
OLD STYLE RAISED JOINT



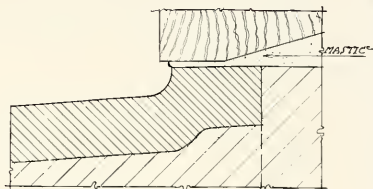
OLD STYLE ROLL JOINT



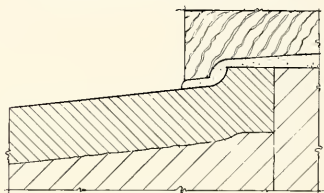
TYPICAL DRIP DETAILS



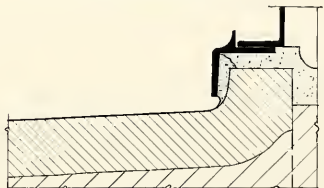
SCALE HALF AND QUARTER FULL SILL



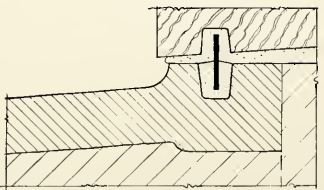
WOOD OR HOLLOW METAL SILLS



TICK UNDER SILL



SILL FOR SOLID METAL FRAMES

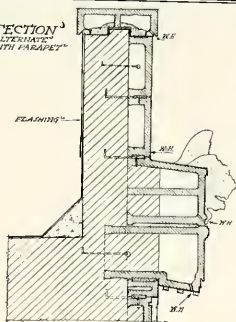


SILL WITH NON-FERROUS WATER BAR

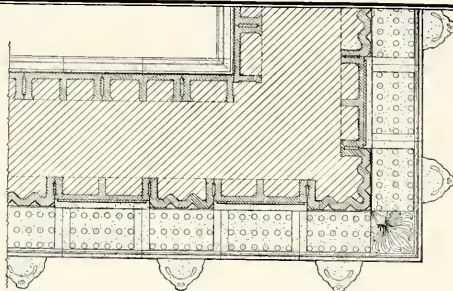


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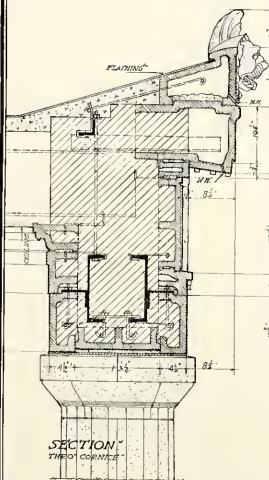
SECTION  
ALTERNATE  
WITH PARAPET



PLAN  
THRU PIECE OF CORNICE  
LOOKING UP

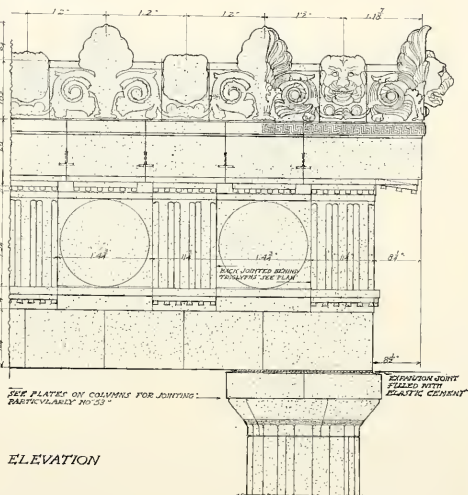


FEATHER



SECTION  
THRU CORNICE

ELEVATION



SEE PLATES OF COLUMNS FOR JOINING  
PARTICULARLY NO 23

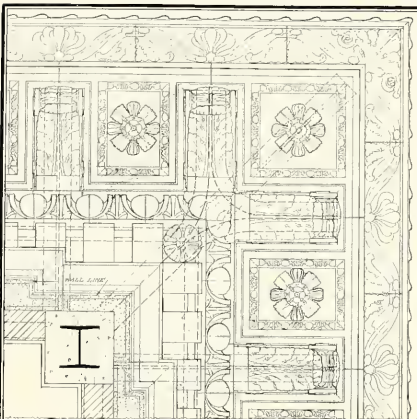
JOINTING JOINT  
FILLED WITH  
PLASTIC CEMENT

CORNICE  
WITH CHENEAV PANELED SOFFIT ETC  
SHOWING METHOD OF SUPPORT AND ANCHORAGE

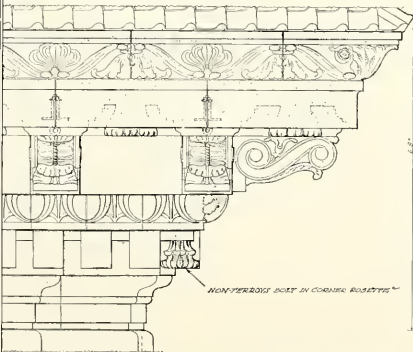
SCALE THREE-QUARTERS OF AN INCH EQUALS ONE FOOT



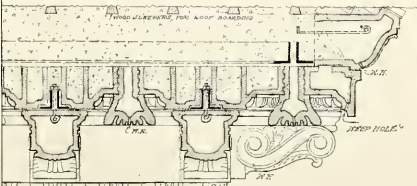




PLAN OF CORNICE "AT A" LOOKING VP



### ELEVATION



SECTION "THRO' MODILLIONS AND SOFFIT"

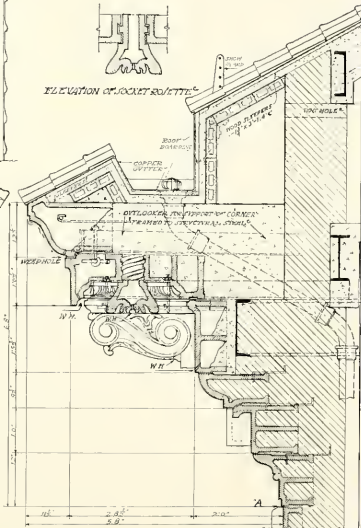
MODILLION CORNICE ~  
WITH GUTTER AND TILE ROOF ~  
SHOWING METHOD OF SUPPORT  
AND ANCHORAGE ~



PLAN<sup>c</sup>



ELEVATION OF SOCKET ROSETTE:



SECTION THRO-CORNICE

SCALE: ONE-HALF INCH EQUALS ONE FOOT



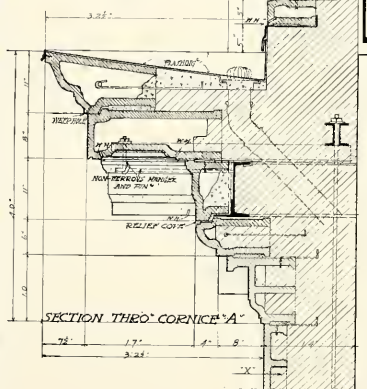
# ▲ ▲ ▲ TERRA COTTA STANDARD CONSTRUCTION ▲ ▲ ▲

## MODILLION CORNICE WITH GVTTER

SHOWING METHOD OF SUPPORT  
AND ANCHORAGE  
CONSTRUCTION OF GVTTER  
DRAINAGE ETC.



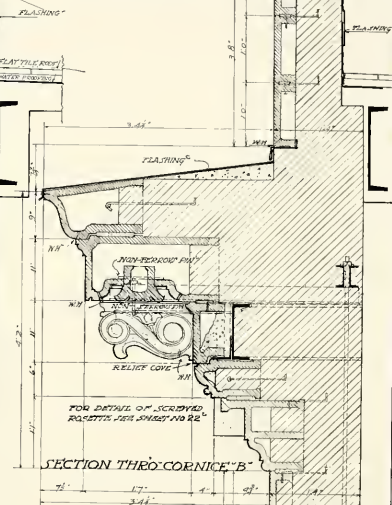
SECTION SHOWING ALTERNATE METHOD  
OF FLASHING



SECTION THRO' CORNICE "A"

## MODILLION CORNICE WITHOUT GVTTER

SHOWING METHOD OF SUPPORT  
AND ANCHORAGE

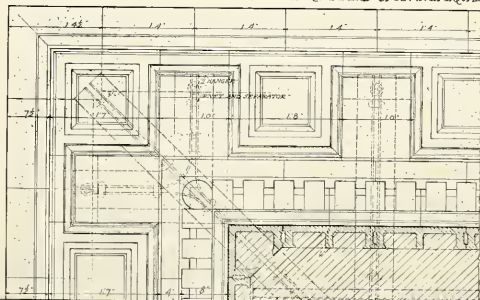


SECTION THRO' CORNICE "B"

## PLAN OF CORNICE "A"

TAKEN AT "X" LOOKING UP

SCALE "THREE QUARTERS OF AN INCH EQUALS ONE FOOT"

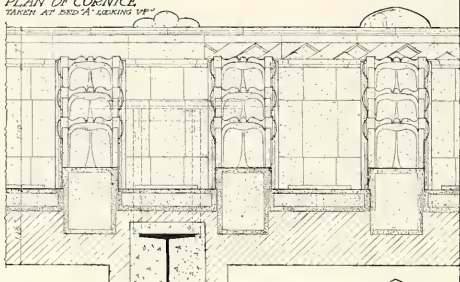




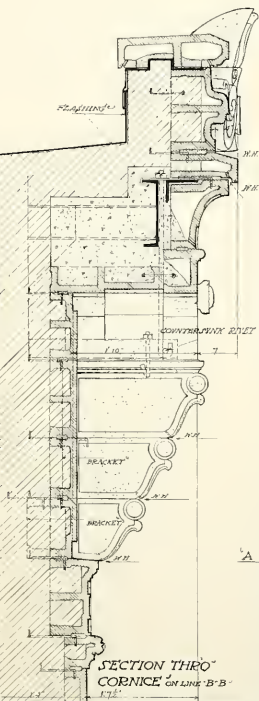
*HEAVY BRACKETED CORNICE"  
WITH ORNAMENTED CHENEAU"  
SHOWING METHOD OF "SUPPORT"  
AND ANCHORAGE"*

SCALE THREE QUARTERS OF AN INCH EQUALS ONE FOOT

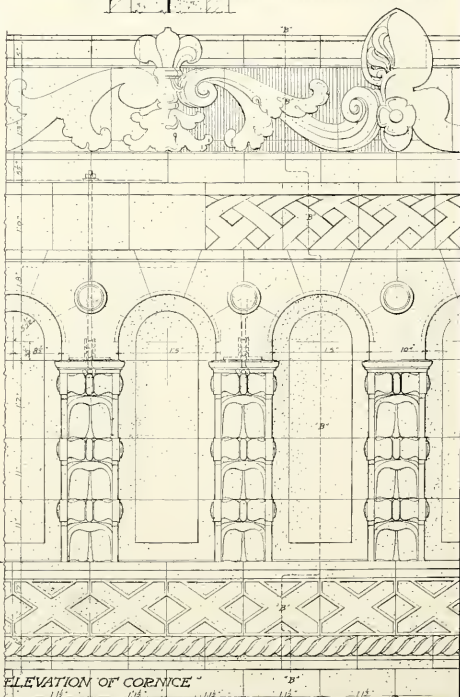
PLAN OF CORNICE"  
TAKEN AT BED "A" LOOKING "UP"



FLAHLING

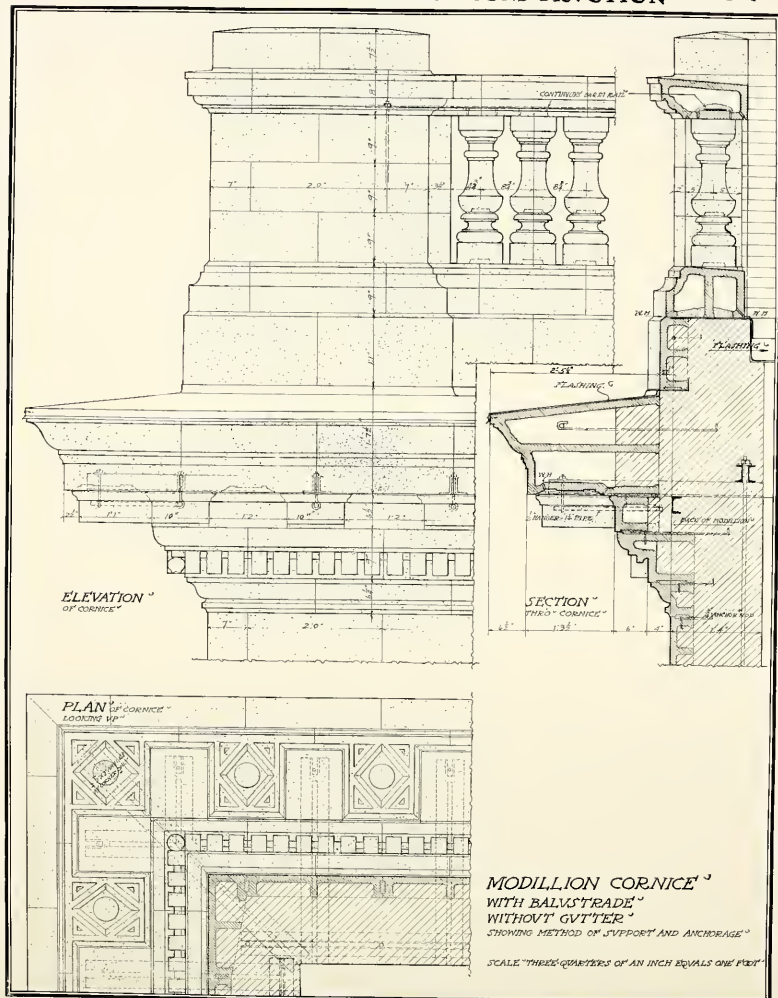


SECTION THRO"  
CORNICE ON LINE "B-B"  
1 7/8"



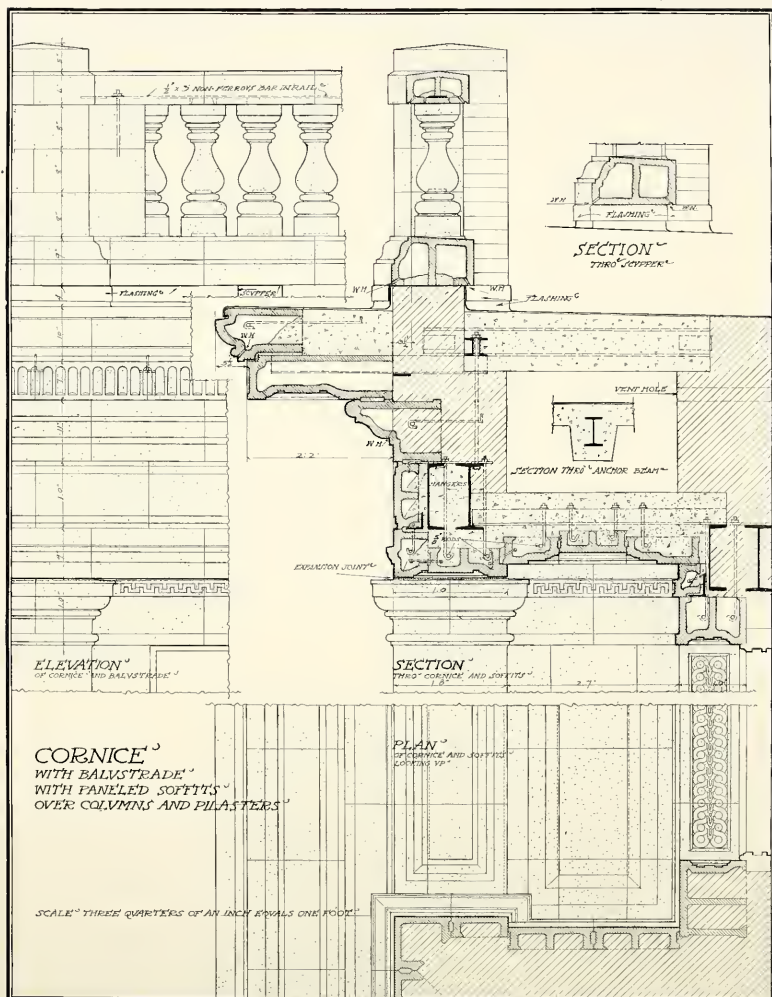
ELEVATION OF CORNICE"









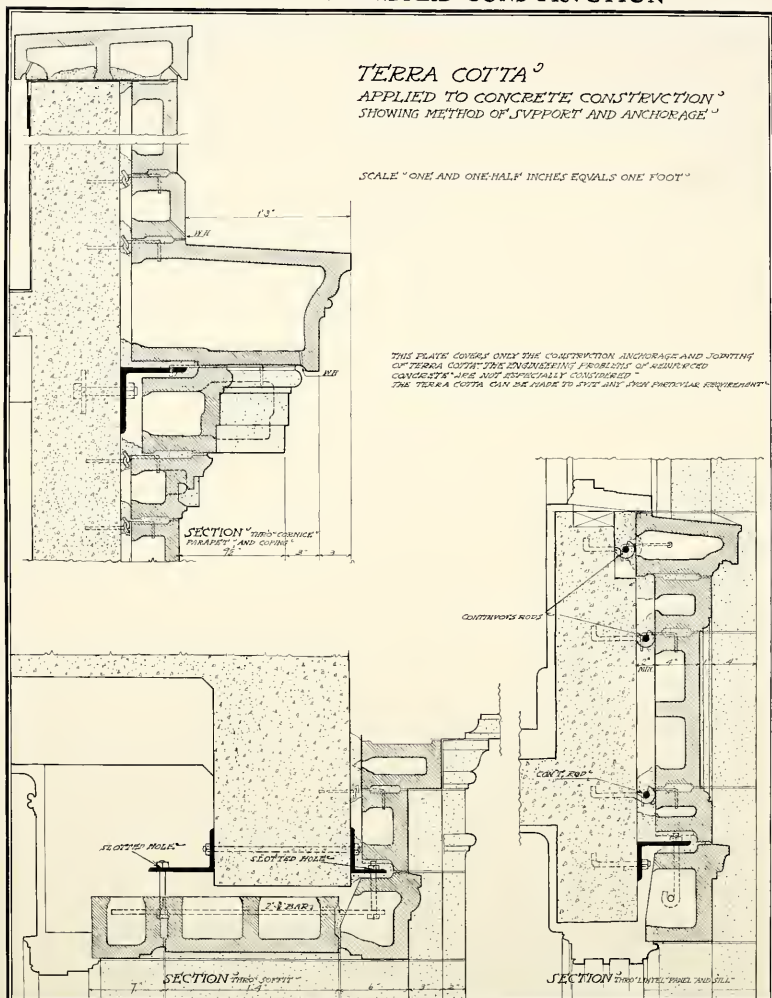




*TERRA COTTA<sup>o</sup>*  
*APPLIED TO CONCRETE CONSTRUCTION<sup>o</sup>*  
*SHOWING METHOD OF SUPPORT AND ANCHORAGE<sup>o</sup>*

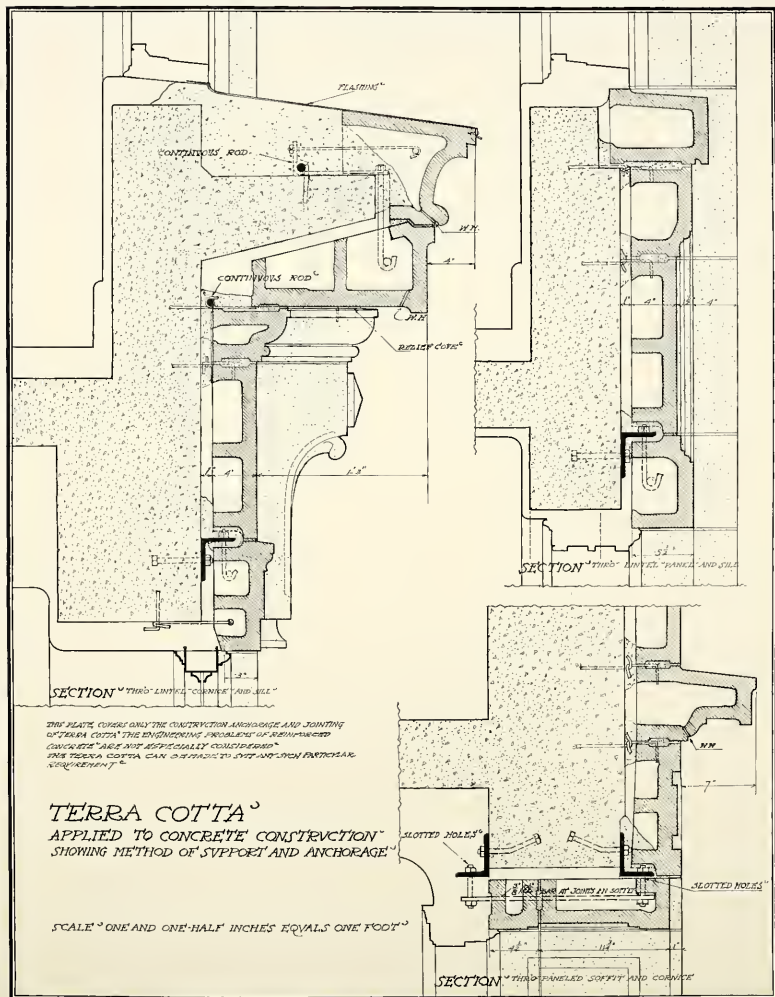
SCALE "ONE AND ONE-HALF" INCHES EQUALS ONE FOOT"

THIS PLATE COVERS ONLY THE CONSTRUCTION, ANCHORAGE AND JOINTING  
 OF TERRA COTTA. THE ENGINEERING PROBLEMS OF REINFORCED  
 CONCRETE ARE NOT ESPECIALLY CONSIDERED.  
 THE TERRA COTTA CAN BE MADE TO STAY ANY POSITION FREQUENTLY.



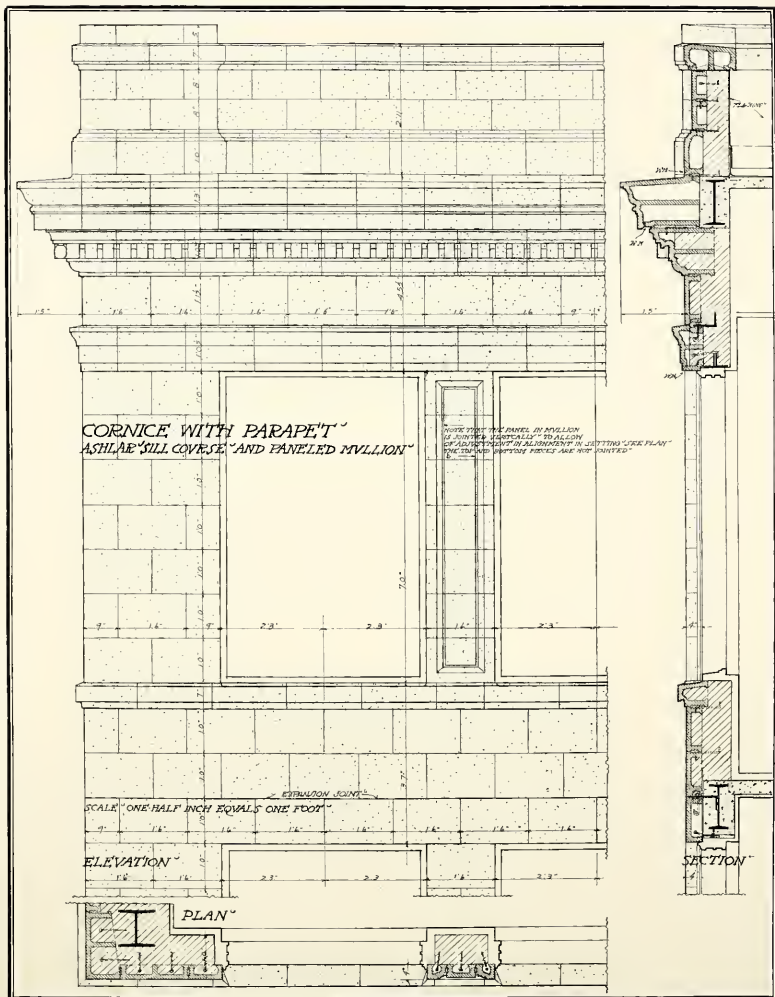


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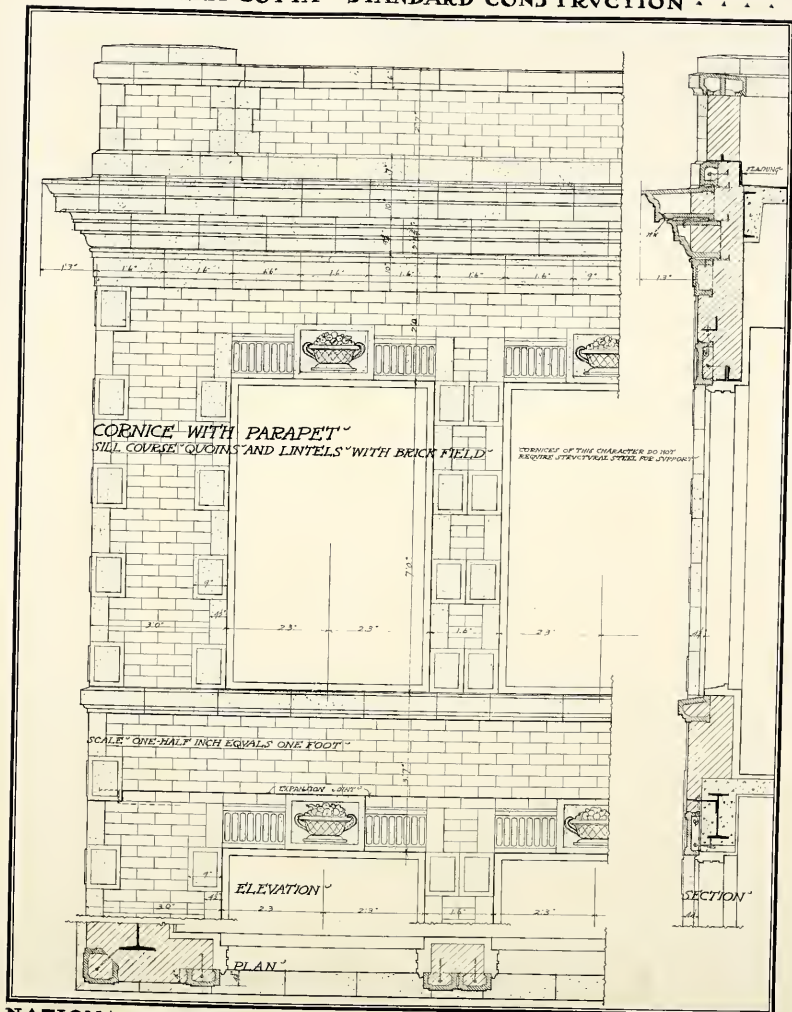
• • • • TERRA COTTA • • STANDARD CONSTRUCTION • • • •





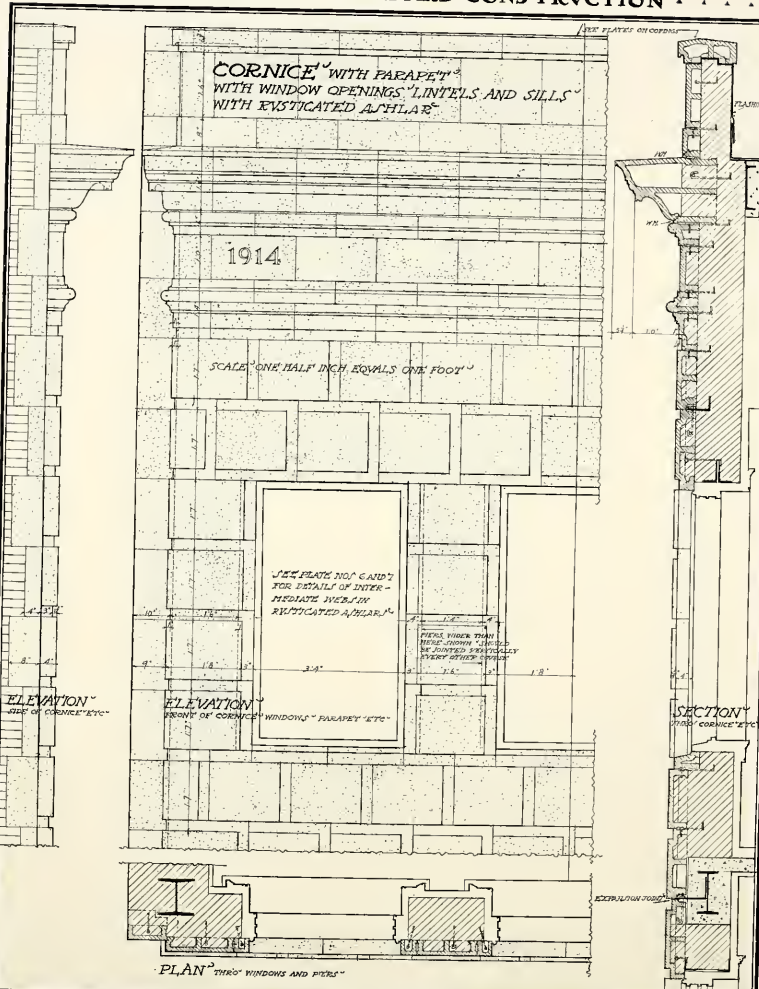


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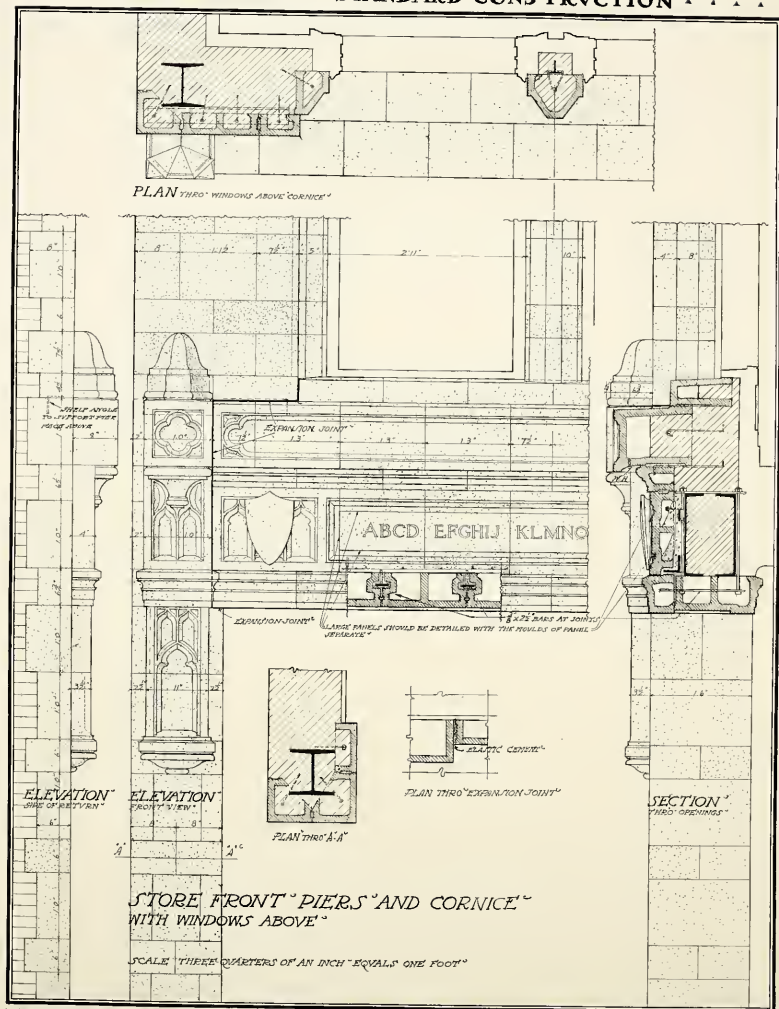


## TERRA COTTA · STANDARD CONSTRUCTION

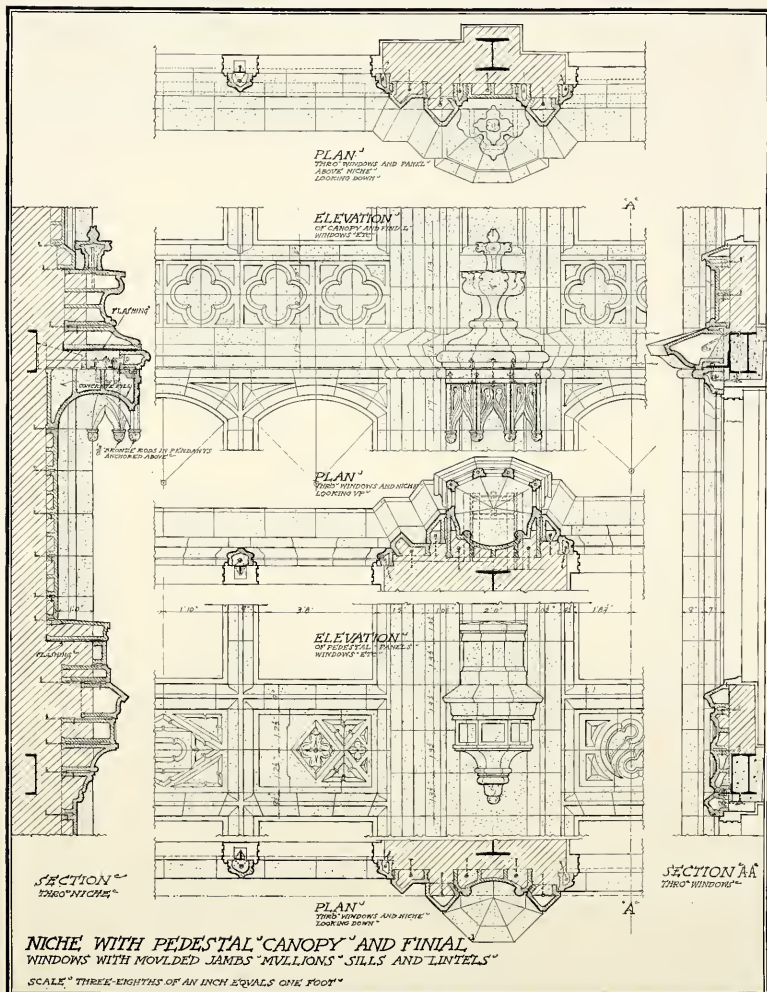




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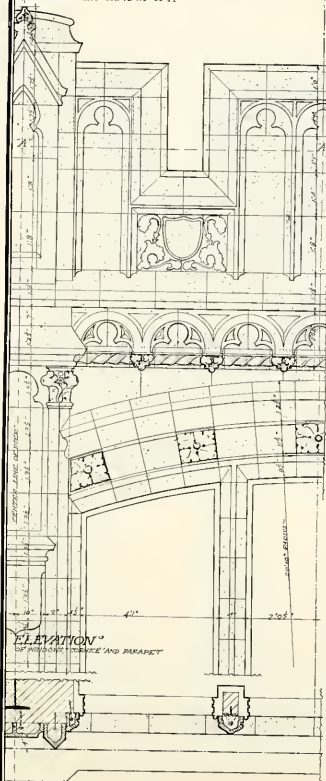
**WINDOWS AND CORNICE  
WITH BATTLEMENTED PARAPET**

SCALE "THREE EIGHTHS OF AN INCH EQUALS ONE FOOT"

PLANNING

CLADDING

PLAN "THIRD PARAPET 'A-A'"



ELEVATION "OF WINDOWS, CORNICE AND PARAPET"

PLAN "THIRD PIER 'WINDOWS AND HYLLION'"

SECTION "THIRD PIER 'WINDOWS AND CORNICE'"

ELEVATION "OF WINDOWS, CORNICE AND PARAPET"

PLAN "THIRD PIER 'WINDOWS AND HYLLION'"

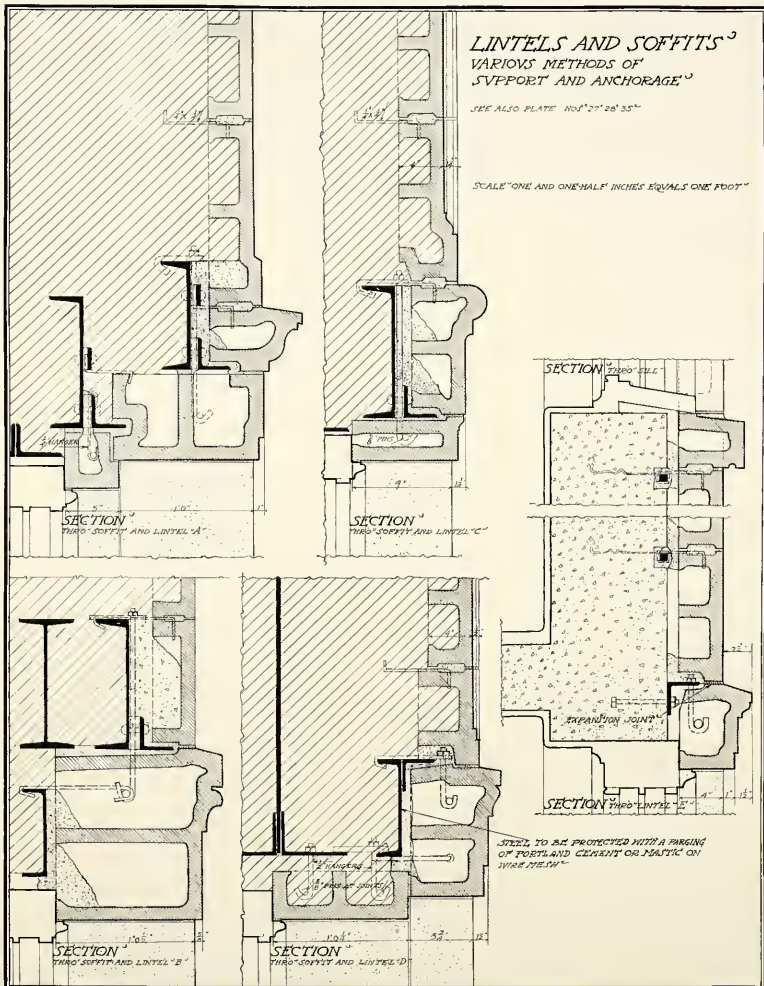
SECTION "THIRD PIER 'WINDOWS AND CORNICE'"



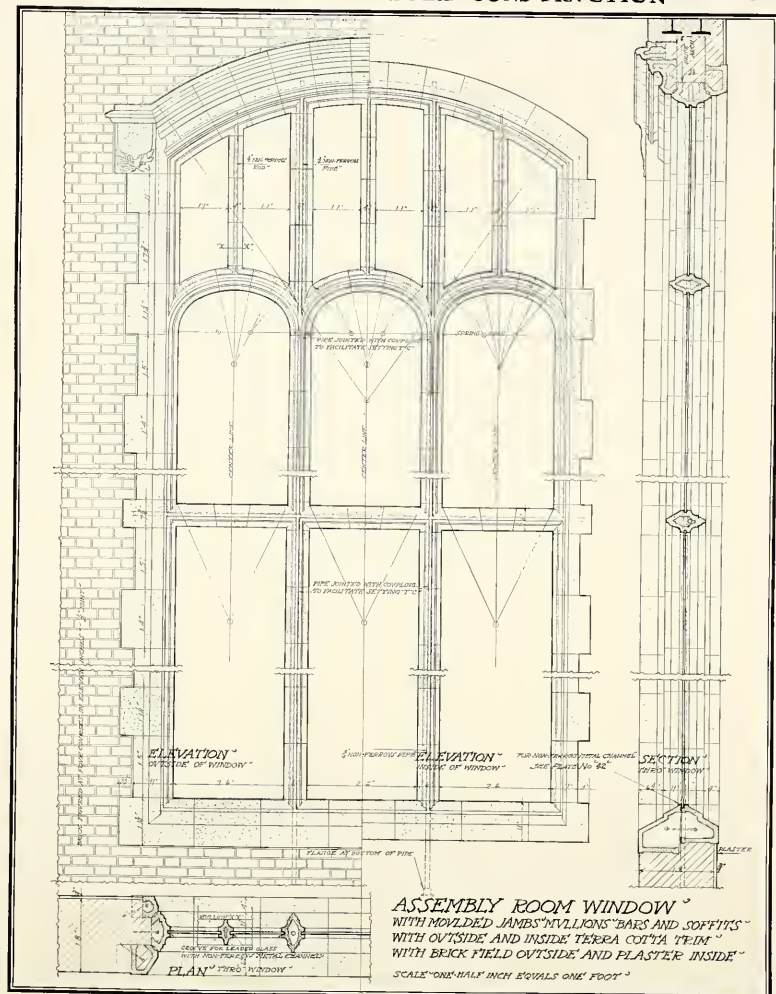
*LINTELS AND SOFFITS<sup>3</sup>*  
*VARIOUS METHODS OF*  
*SUPPORT AND ANCHORAGE<sup>3</sup>*

SEE ALSO PLATE NO. 127-28-35

SCALE "ONE AND ONE-HALF" INCHES EQUALS ONE FOOT"

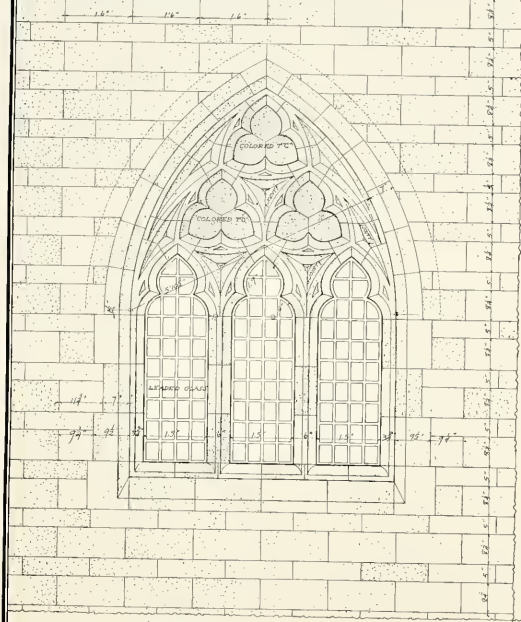




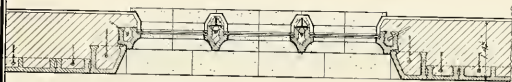




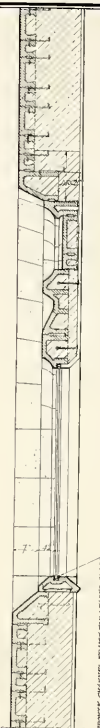
GOTHIC WINDOW  
WITH COLORED TERRA COTTA INSERTS  
WITH ASHLAR FIELD



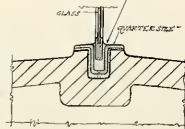
ELEVATION  
OF WINDOW



PLAN  
THRO' WINDOW



SECTION  
THRO' WINDOW



SCALE "ONE HALF" INCH EQUALS ONE FOOT"





ROSE WINDOW  
WITH MOULDED AND ORNAMENTED TRIM  
WITH BRICK FIELD

ELEVATION  
ONE QUARTER OF WINDOW

SCALE "THREE-QUARTERS" OF AN INCH EQUALS ONE FOOT

PLAN  
THRU WINDOW

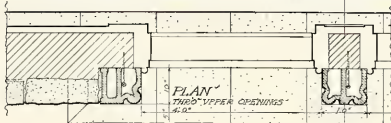
THESE OUTSIDE RECESSES AT BOTTOM FILLED FLUSH "SO AS TO DIED FLAT"



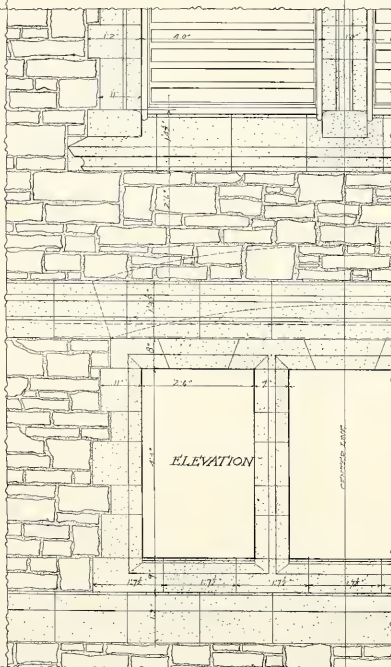




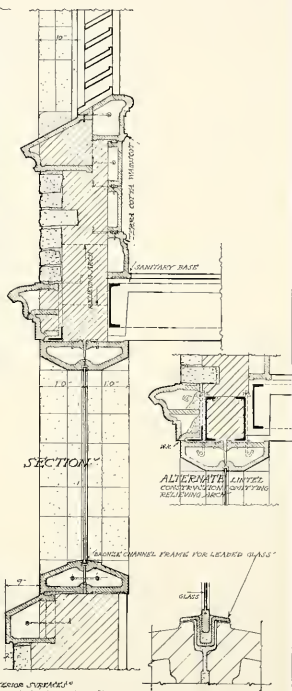
**TERRA COTTA • STANDARD CONSTRUCTION**



MULLIONED AND LOUVERED WINDOWS—  
WITH TERRA COTTA TRIM AND  
RUBBLE STONE FIELD—



ELEVATION

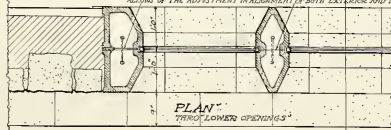


ALTERNATE LINTEL  
CONSTRUCTION: CHIPPING  
RELIEFING ARCH

'BRONZE' CHANNEL FRAME FOR LEADED GLASS

THE VERTICAL JOINTING OF JAMES' MILLIONS "SILLS" AND HEADS" ALLOWS OF THE ADJUSTMENT IN ALIGNMENT OF BOTH EXTERIOR AND INTERIOR SURFACES.

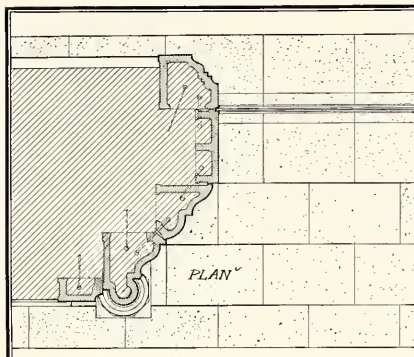
SCALE - ONE-HALF INCH EQUALS ONE FOOT



PLAN:

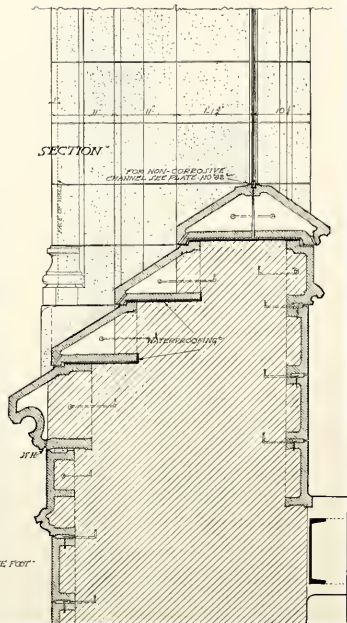
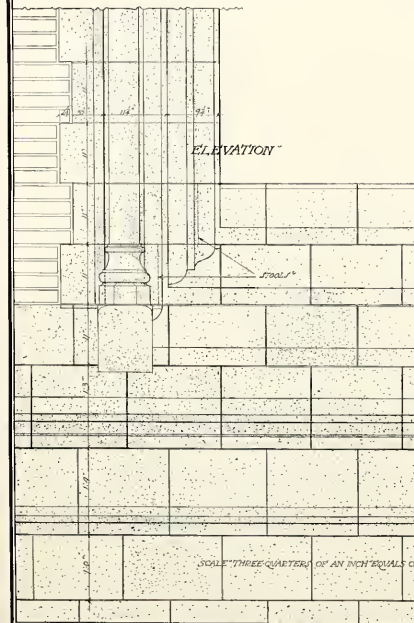
THREE LOWER OPENINGS





WINDOW  
WITH MOULDED JAMB AND SILL  
WITH INTERIOR TERRA COTTA WAINSCOT

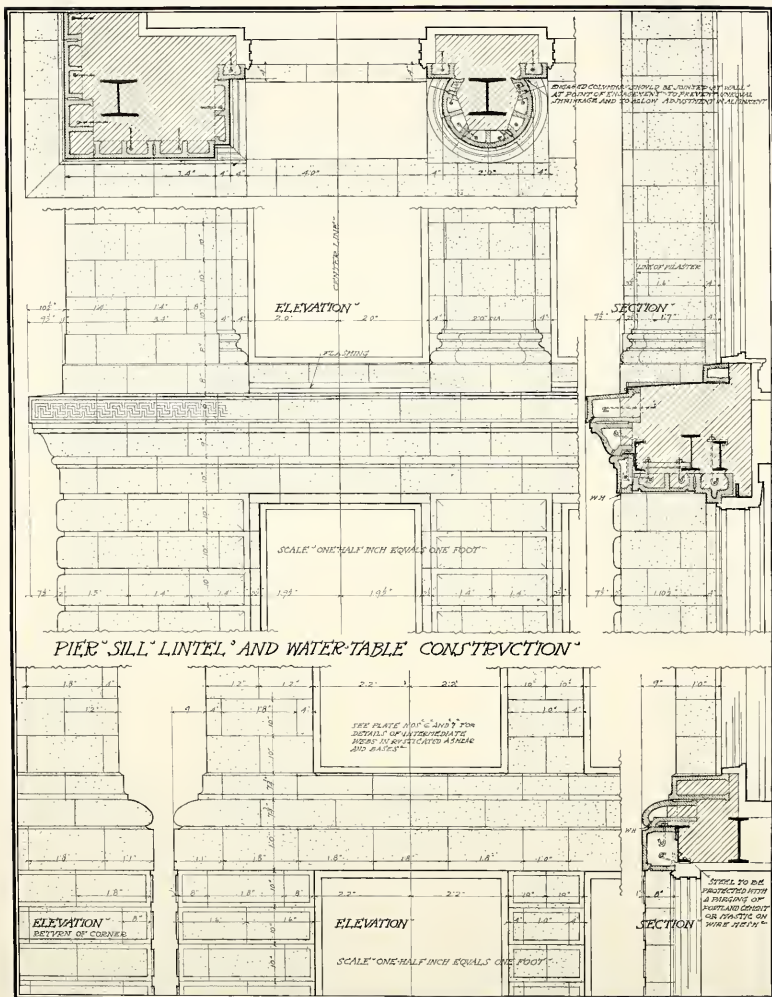
THE VERTICAL JOINTING OF MOULDED JAMBS (PARTLY  
CONCEALED BY JAMB CHISEL) AS JOINED BY SETTING  
OF ADJUSTMENT BY ALIGNMENT BY SETTING





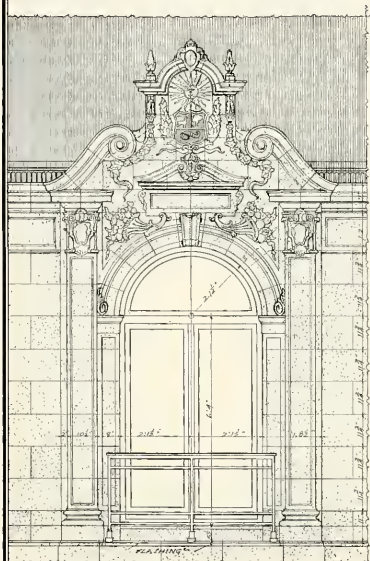


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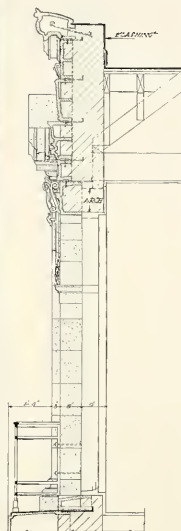




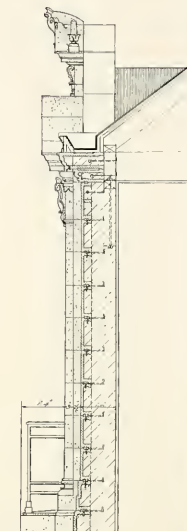
ATTIC STORY WINDOW<sup>U</sup>  
WITH PILASTERS ARCH PEDIMENT AND BALCONY<sup>U</sup>



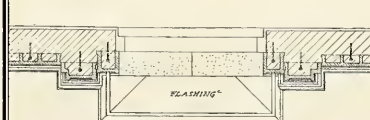
ELEVATION<sup>U</sup>  
FRONT OF WINDOW<sup>U</sup>



SECTION<sup>U</sup>  
THIRD WINDOW<sup>U</sup>



SECTION<sup>U</sup>  
THIRD SIDE<sup>U</sup>

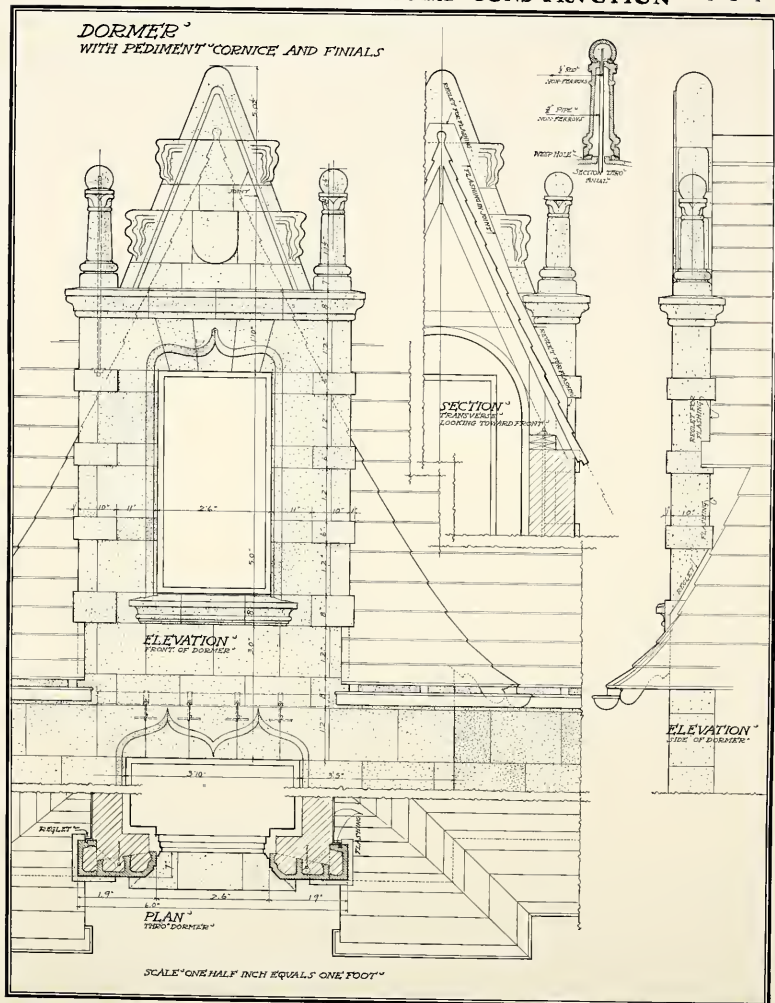


PLAN<sup>U</sup>  
THIRD WINDOW<sup>U</sup>

SCALE<sup>U</sup> THREE EIGHTHS OF AN INCH EQUALS ONE FOOT<sup>U</sup>

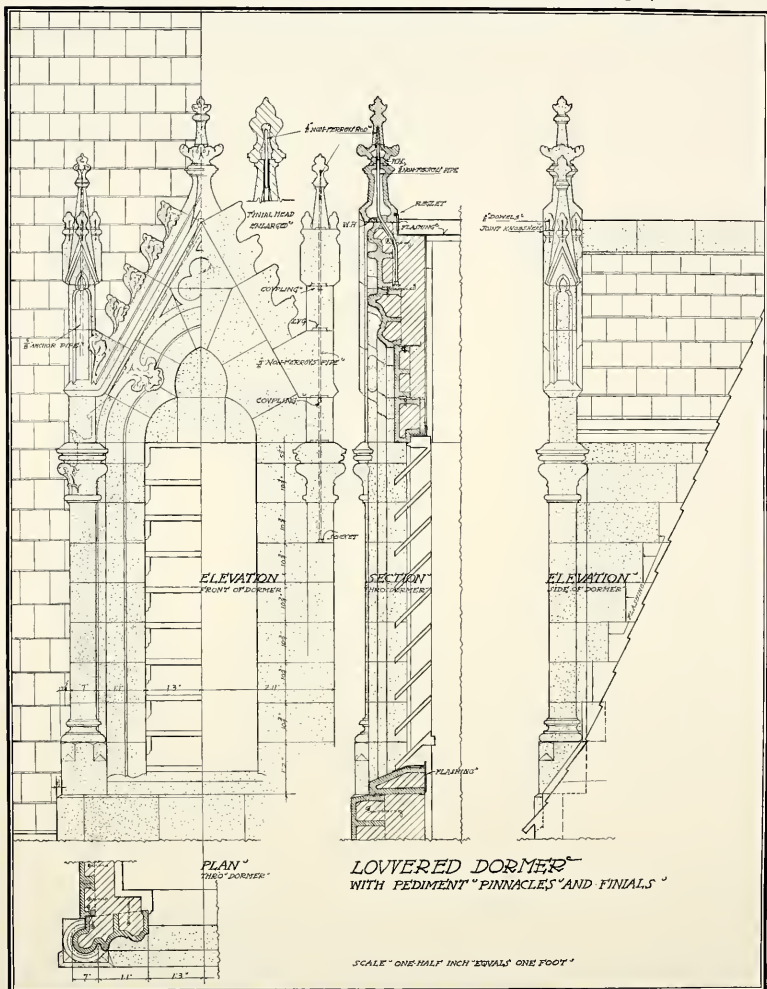


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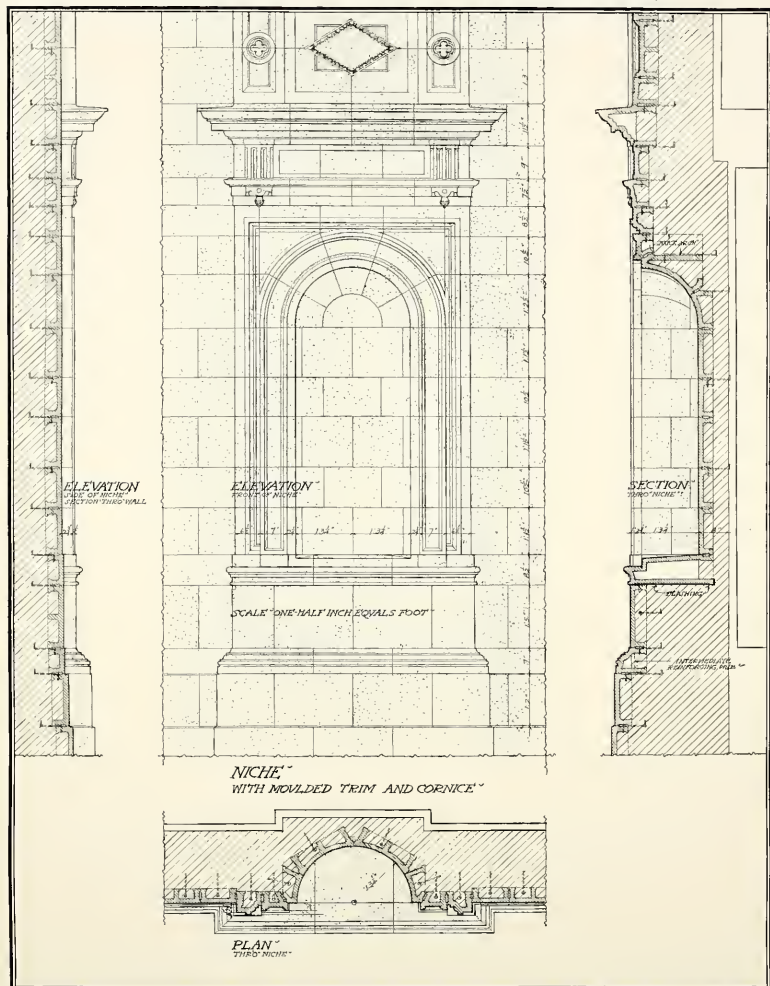


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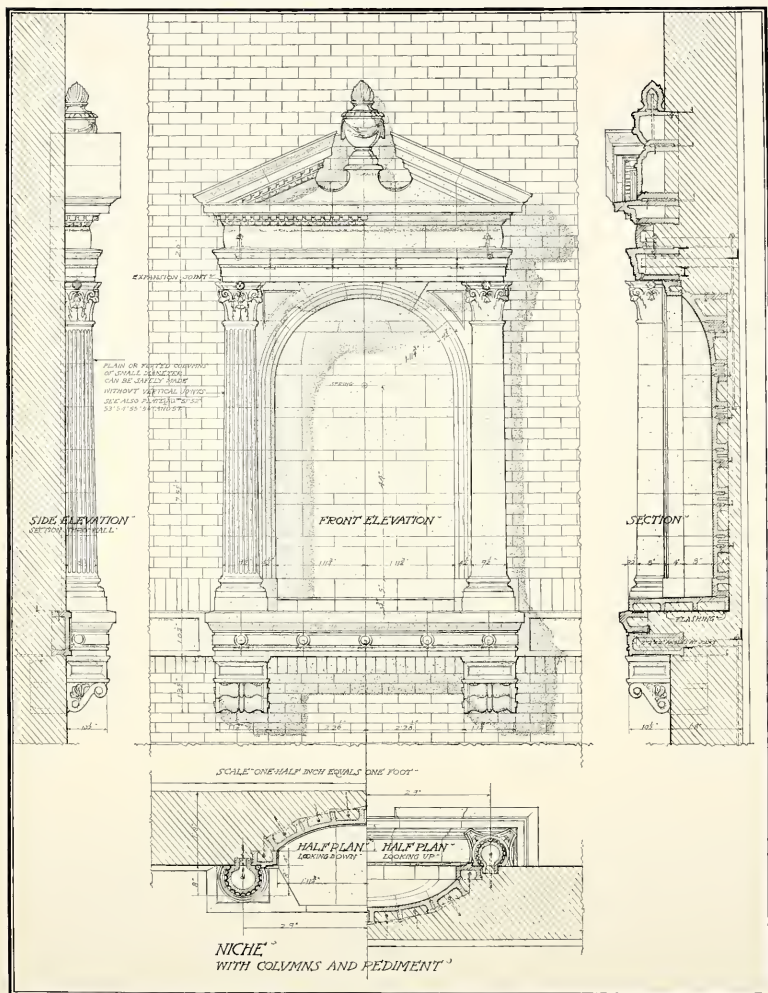






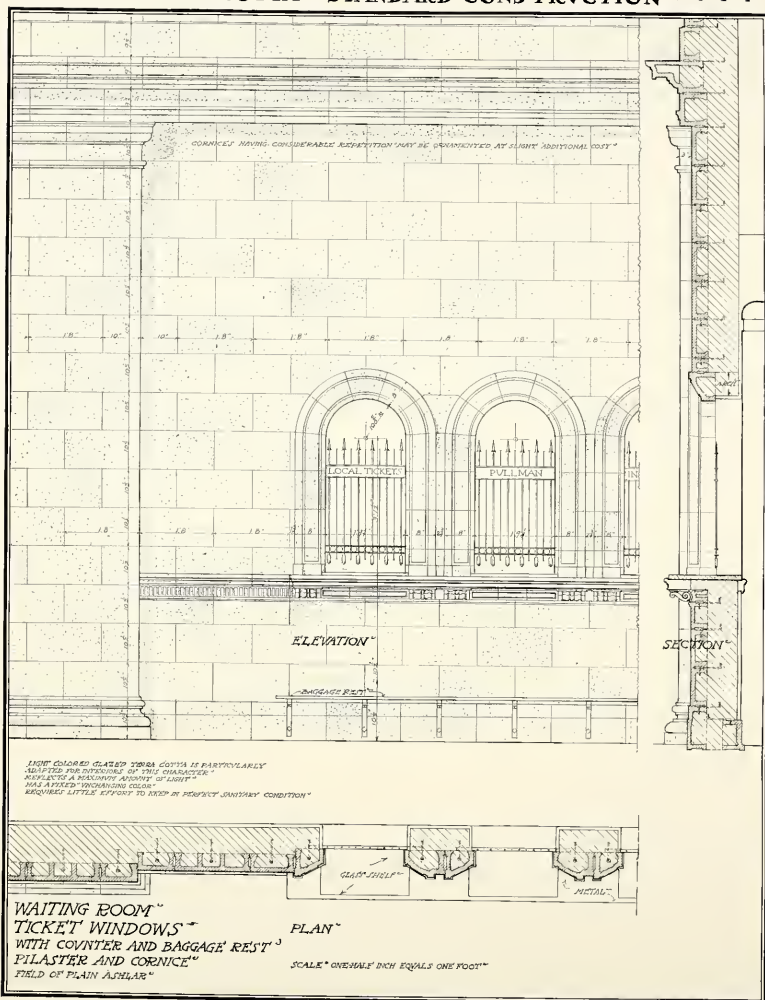








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OCTAGON COLUMN<sup>3</sup>  
WITH CAPITAL AND BASE<sup>3</sup>

ARACHS JOINED INTO QUARTERS

*ELEVATION*  
*CAPITAL OF COUNTY*

SCALE: "THREE-QUARTERS OF AN INCH EQUALS ONE FOOT"

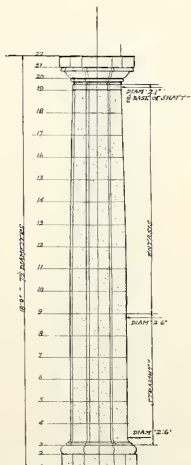


**DIAGRAM** OF METHOD FOR OBTAINING ENTASIS OF SHAFT  
LAY OUT ACCURATELY TO FULL SIZE OF COLUMN  
A-B-C AND D CAN THEN BE ACCURATELY MEASURED  
GIVING THE DIAMETERS AT 11-13-15- AND 17"

PLAN THRO' NECK  
LOOKING VP

PLAN THRO' BOTTOM  
LOOKING DOWN

THE SHAFT "AS JOINTED" TENDS ~  
TO CONCEAL THE VERTICAL JOINT,  
PERMITS CLOSE FITTING AND ALLOW  
OF ADJUSTMENT IN ALIGNMENT  
IN SETTING



THE MOULDED CORNICES  
OF LARGE COLUMNS  
SHOULD BE JOINTED  
SEPARATELY

SEE PLATE NO. 7 FOR  
INTERMEDIATE WAYS  
IN BASINS

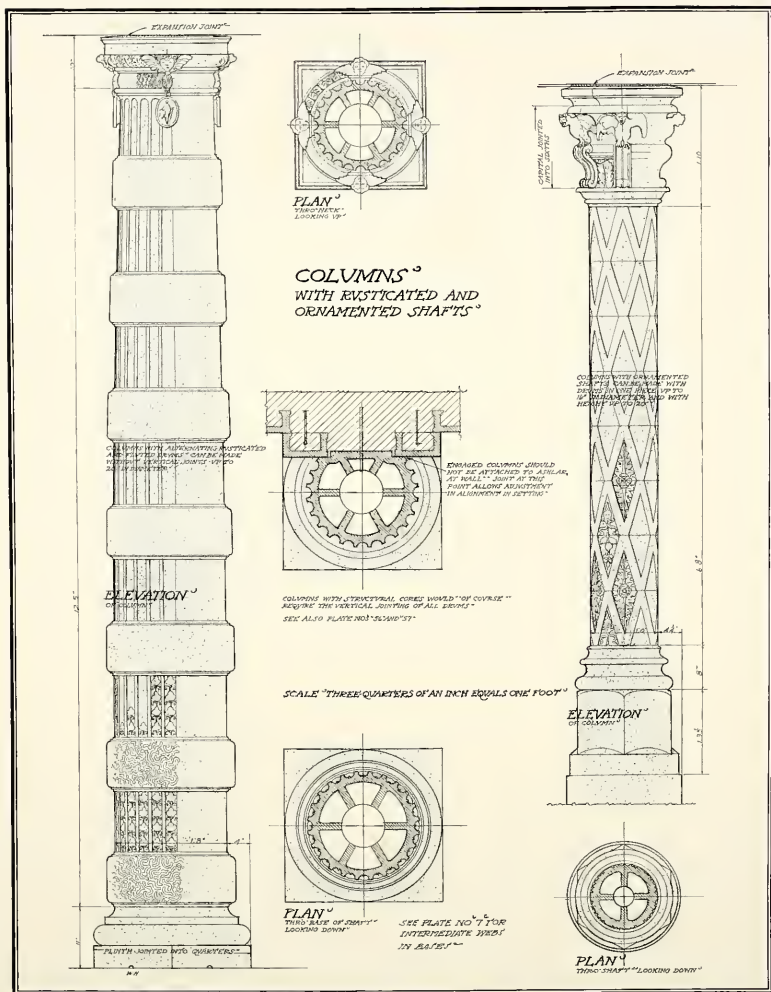
ELEVATION <sup>3</sup>  
BASE OF COLYTIN <sup>4</sup>

SCALE: "ONE QUARTER OF AN INCH EQUALS ONE FOOT"

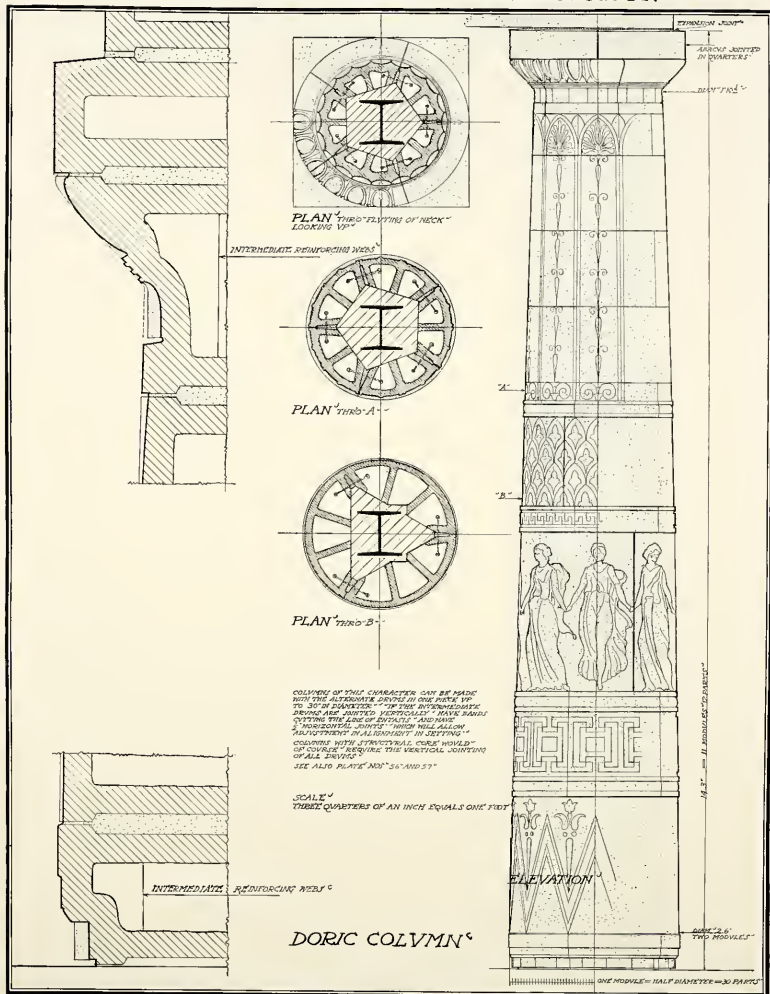
WEEPAHLE





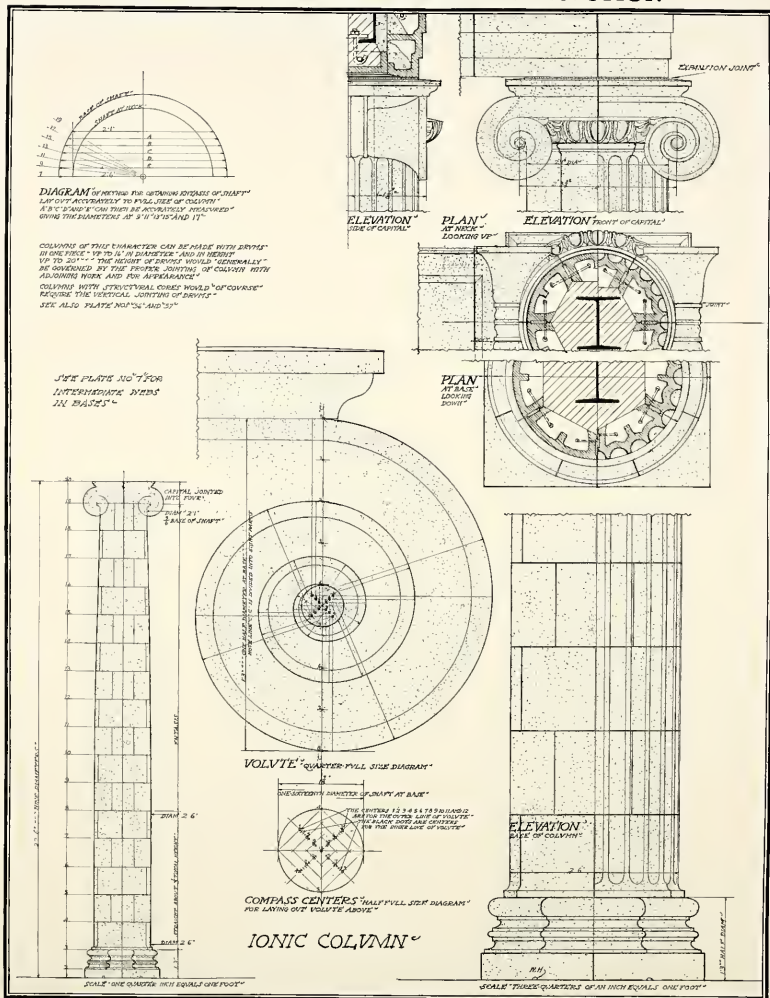








# TERRA COTTA · STANDARD CONSTRUCTION ·





ELEVATION OF CAPITAL

SCALE "THREE-QUARTERS OF AN INCH" EQUALS ONE FOOT

THE JOINTS IN LARGE CAPITALS MAY BE CONCEALED BY FOLLOWING THE LINES OF ORNAMENT

DIAGRAM FOR OBTAINING ENTASIS OF SHAFT

LAY OUT ACCURATELY TO FULL SIZE OF COLUMN  
FOR "C" AND "D" IN THIS CASE ADVISORY MEASURES  
USING THE DIAMETERS AT 1' 3" IS AND 12"

DIAGRAM OF JOINTING AND ENTASIS

SCALE "ONE INCH EQUALS FOUR FEET"

PLAN THE NECK OF SHAFT  
LOOKING UP

PLAN THE BASE OF SHAFT  
LOOKING DOWN

## CORINTHIAN COLUMN

COLOURS OF THIS CHARACTER CAN BE MADE UP BY  
DYEING IN ONE PLACE UP TO 12 IN DIAMETER AND  
WITH RESPECT TO 24 IN "C" THE SPOT OF DYEING  
WOULD GENERALLY BE COVERED BY THE PAINTER  
JOINTING OF COLUMN WITH ADVISING WORK AND  
FOR APPEARANCE

COLUMNS WITH STRUCTURAL CORES SHOULD  
OF COURSE BEASURE THE VERTICAL JOINTING  
OF ENDS

SEE PLATE NO. 54 FOR  
INTERMEDIATE HERE  
ILLUSTRATED

ELEVATION OF BASE

SCALE "THREE-QUARTERS OF AN INCH" EQUALS ONE FOOT





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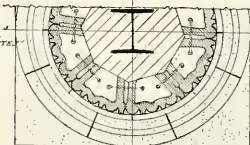
**COLUMN FLYTES<sup>o</sup>**

SHOWING METHOD OF VERTICAL JOINTING FROM  
ALLOW OF CONSIDERABLE ADJUSTMENT IN  
ALIGNMENT IN SETTING AND ALSO  
TEND TO CONCEAL JOINTS

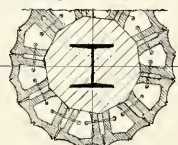
FULL SIZE PLAN *shows flytes - PLAN A*

FULL SIZE PLAN *shows flytes with excess flytes - PLAN B*

PLAN A<sup>o</sup>  
BEADED FLYTES

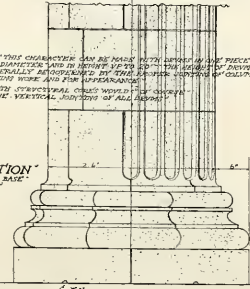


PLAN B<sup>o</sup>  
WITH EXCESS  
FLYTES



COLUMNS OF THIS CHARACTER CAN BE MADE WITH SPACED IN THE PIECES  
UP TO 12 IN DIAMETER AND IN HEIGHT UP TO 20" THE JOINTING DEVICES  
WOULD GENERALLY BE DETERMINED BY THE JOINTING OF COLUMN  
WITH ASSUMING WORK AND FOR APPROPRIATE  
COVERING WITH OVERLAPPING CHAMFERS TO BE SET IN  
ACCORDANCE WITH THE VERTICAL JOINTING OF ALL WORK

ELEVATION<sup>o</sup>  
SHAFT AND BASE  
OF PLAN A



SCALE "THREE-QUARTERS OF AN INCH EQUALS ONE FOOT"

ELEVATION<sup>o</sup>  
SHAFT OF  
PLAN B



SEE PLATE NO. 7 FOR  
INTERMEDIATE HEIGHT IN  
BASE



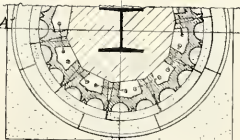
# COLUMN FLUTES

SHOWING METHOD OF VERTICAL JOINTING  
THAT ALLOWS OF CONSIDERABLE ADJUSTMENT  
IN ALIGNMENT IN SETTING AND ALSO  
TENDS TO CONCEAL JOINTS

PLAN TYPE PLAN, BUSTED, HIGHEST-SETTING

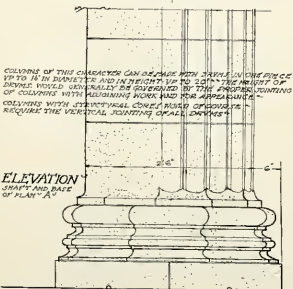
PLAN A

FLUTES  
WITH  
SQUARE  
FILLETS

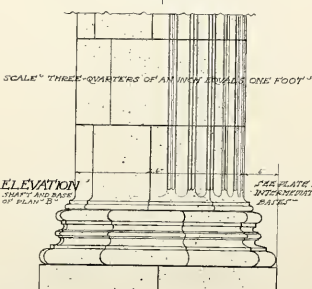


PLAN B

FLUTES  
WITH  
RIBBED  
FILLETS



ELEVATION  
SHAFT AND BASE  
OF PLAN A



ELEVATION  
SHAFT AND BASE  
OF PLAN B

SEE PLATE NO. 7 FOR  
INTERMEDIATE WORK IN  
BASE

SCALE: THREE-QUARTERS OF AN INCH EQUALS ONE FOOT

COLUMNS OF THIS CHARACTER CAN BE PAIR WITH SHAFTS IN ONE PIECE  
UP TO 18 IN DIAMETER AND IN HEIGHT UP TO 25 FT. THE HEIGHT OF  
JOINTS WOULD USUALLY BE CONSIDERED IN THE POSITION JOINTING  
OF COLUMNS WITH ALIGNING WORK HAD FOR APPEARANCE  
COLUMNS WITH CENTRIFUGAL CORNERS WOULD OF COURSE  
REQUIRE THE VERTICAL JOINTING OF ALL JOINTS



# • • • • TERRA COTTA • STANDARD CONSTRUCTION • • • •

PART PLAN OF DOME  
ABOVE SKYLIGHT "LOCKING DOWN"

DOME CONSTRUCTION  
WITH TERRA COTTA COVERING CORNICE  
PARAPET "GUTTER"  
SKYLIGHT "ETC"

SCALE "ONE HALF INCH EQUALS ONE FOOT"

SECTION THRO' DOME  
ON CENTER LINE "A-A"

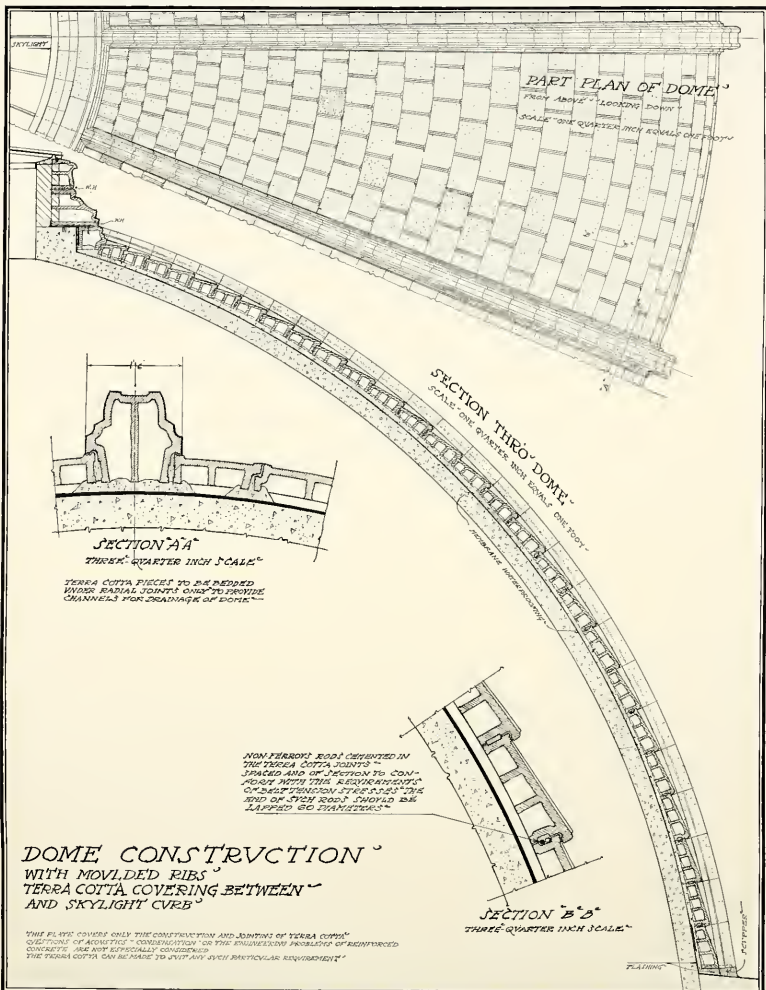
DETAIL OF FLASHING AND DRAINAGE  
OF DOME AT LOWER LOWER TERRA COTTA COURSE

THIS PLATE COVERS ONLY THE CONSTRUCTION AND JOINTING OF TERRA COTTA—  
QUESTIONS OF ROOFING "CONDENSATION" OR THE ENGINEERING PROBLEMS OF REINFORCED CONCRETE—  
ARE NOT ESPECIALLY CONSIDERED—  
THE TERRA COTTA CAN BE MADE TO SUIT ANY SUCH PARTICULAR REQUIREMENT"

PLATE 2135



• • • • • TERRA COTTA • STANDARD CONSTRUCTION • • • • •

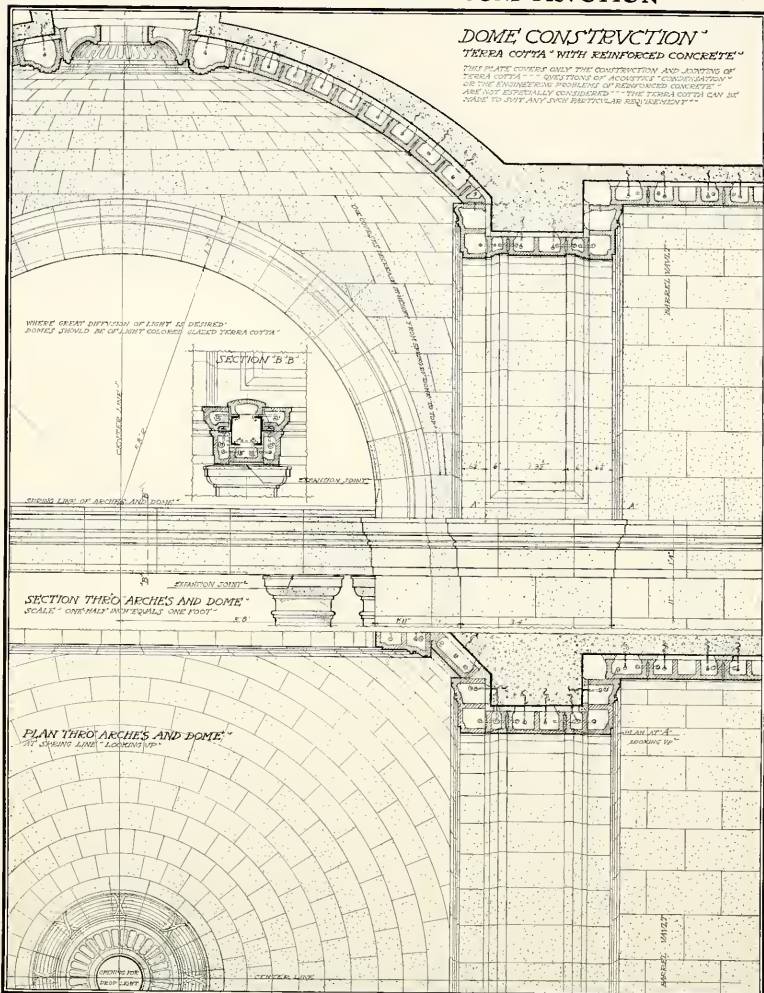






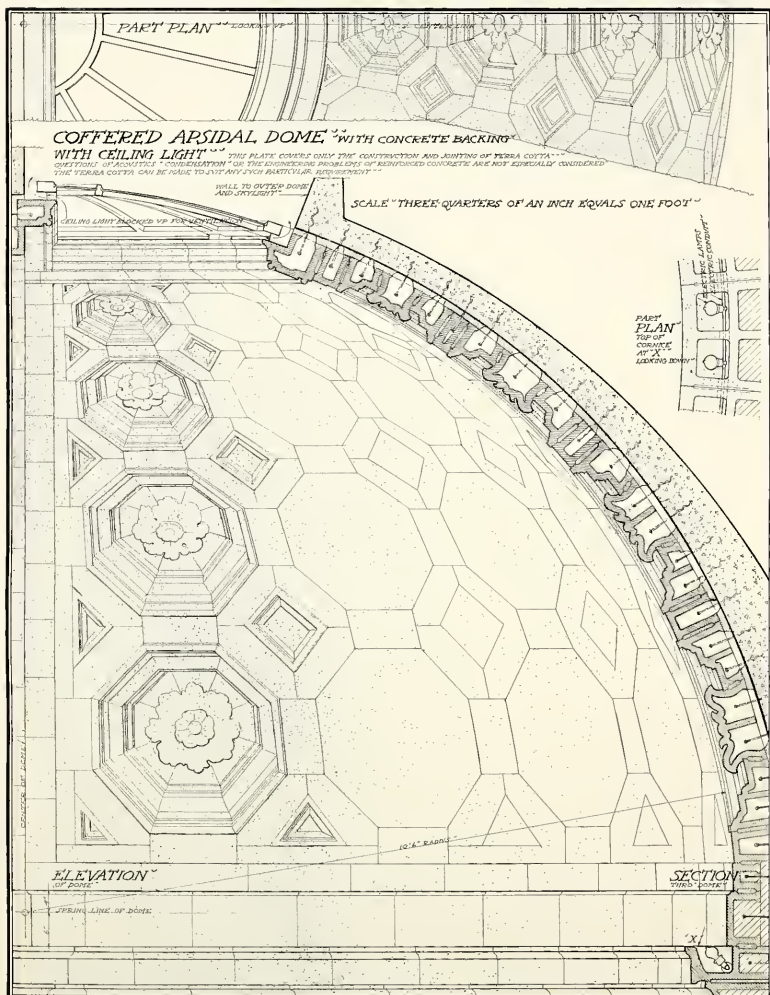
# *DOME CONSTRUCTION* *TERRA COTTA WITH REINFORCED CONCRETE*

THIS PLATE COVERS ONLY THE CONSTRUCTION AND JOINING OF  
TERRA COTTA. — QUESTIONS OF ACQUISITION, CONSTRUCTION  
OR THE ENGINEERING PROBLEMS OF REINFORCED CONCRETE  
ARE NOT ESPECIALLY CONSIDERED. — THE TERRA COTTA CAN BE  
MADE TO FIT ANY JOINT PARTICULARLY WELL.

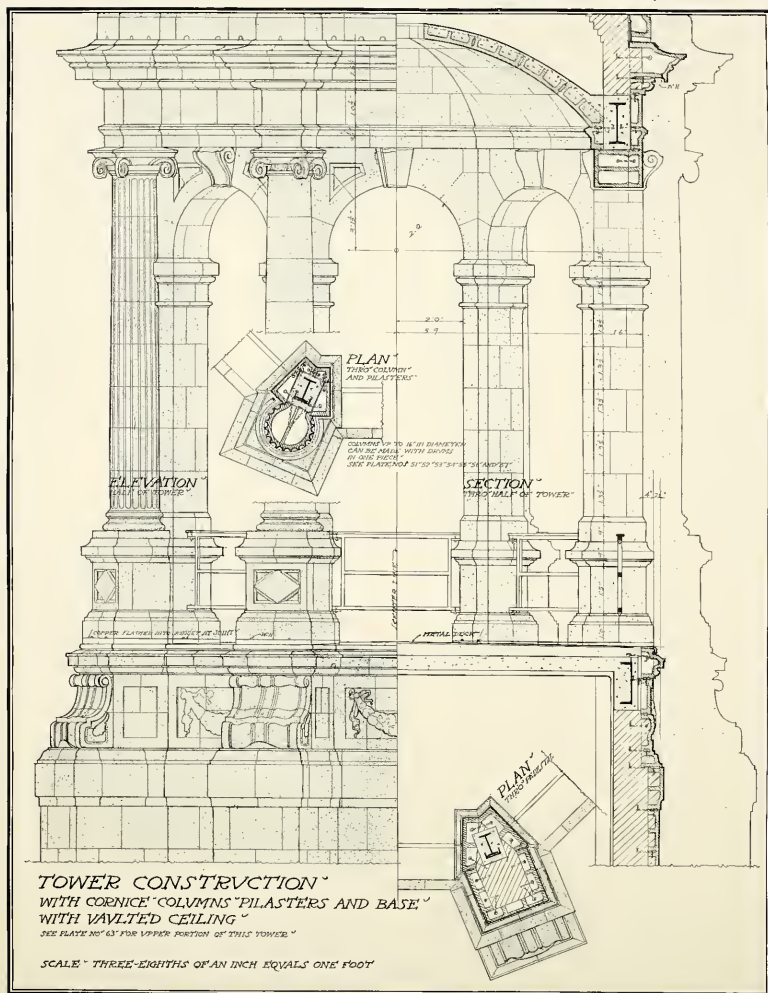




• • • • TERRA COTTA • • STANDARD CONSTRUCTION • • • •









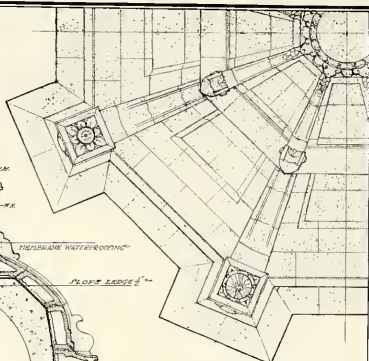
▲ ▲ ▲ ▲ TERRA COTTA STANDARD CONSTRUCTION ▲ ▲ ▲ ▲

TOWER CONSTRUCTION  
WITH CORNICE  
CAROUCHE'S RIBS AND CROWN

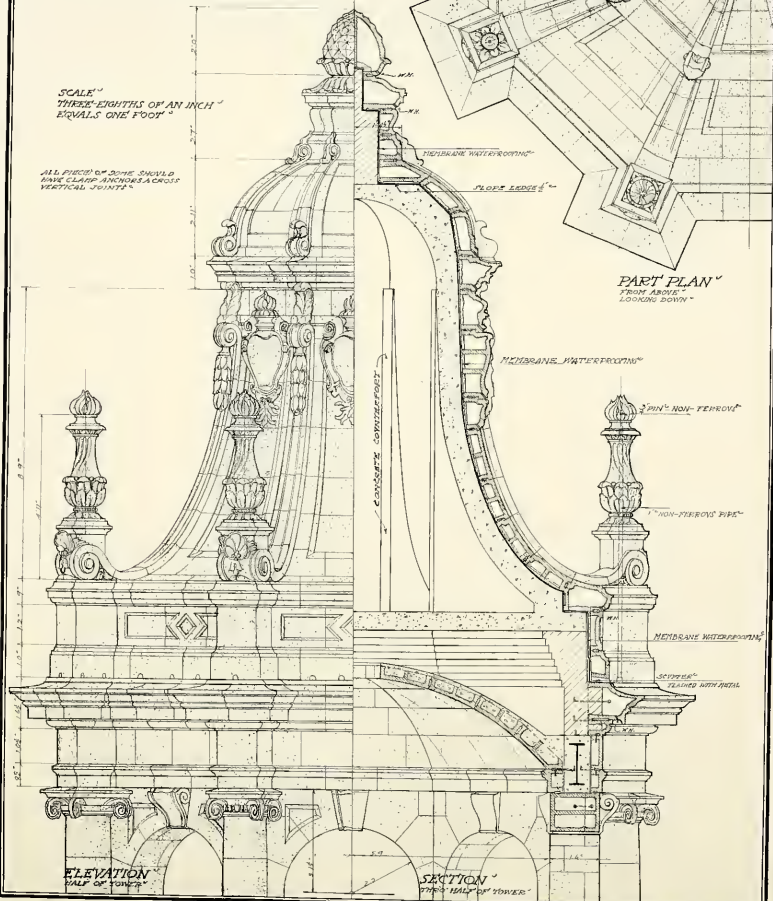
SEE PLATE NO. 62 FOR LOWER PORTION OF THIS TOWER

SCALE  
THREE-EIGHTHS OF AN INCH  
EQUALS ONE FOOT

ALL PIECES OF DOME SHOULD  
HAVE CLIPS AND BE A CROSS  
VERTICAL JOINTS



PART PLAN  
FROM ABOVE  
LOOKING DOWN



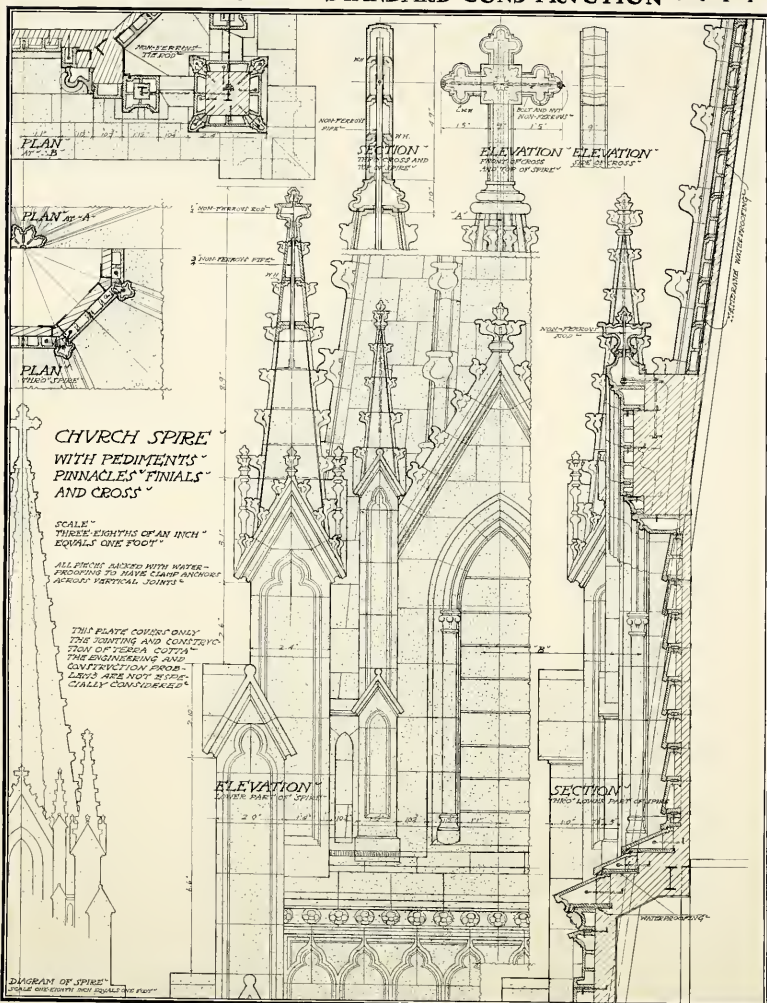
ELEVATION  
HALF OF TOWER

SECTION  
THRU HALF OF TOWER

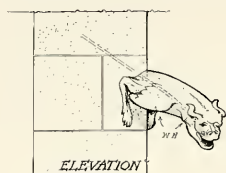




**TERRA COTTA · STANDARD CONSTRUCTION**

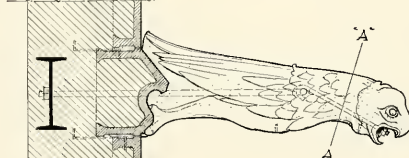
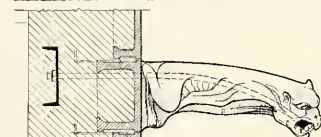




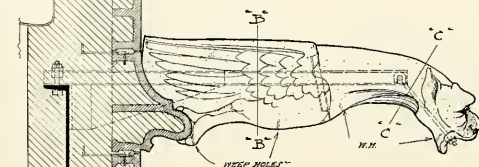


## GARGOYLES

WHEN STEEL IS USED FOR THE SUPPORT OF GARGOYLES  
IT SHOULD BE SO DESIGNED AS TO BRIDGE WITH  
VERTICAL STEEL OF THE BUILDING  
ALL JOINTS "WASHED" WITH "ZINC" TO BE NON-FERROUS



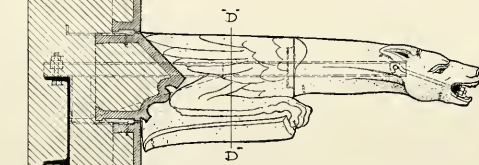
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

SECTION

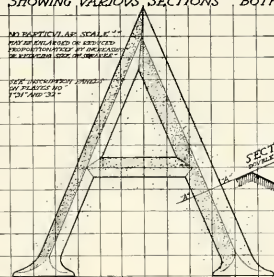
SCALE ONE INCH EQUALS ONE FOOT



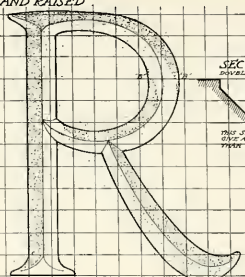
LETTERING  
SHOWING VARIOUS SECTIONS "BOTH INCISED AND RAISED"

IMPERFECT LATE SCALE "A"  
NOT ENCLOSED IN SECTION  
PROPORTIONATELY BY INCREASE  
IN SECTION SIDE IN PROPORTION

THE PROPORTION USED  
BY PLATE NO.  
121 AND 122

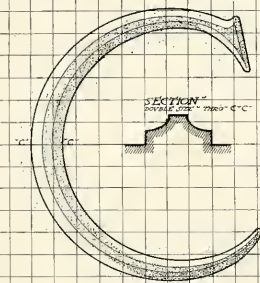


SECTION  
DOUBLE STEP THIRD "A-A"

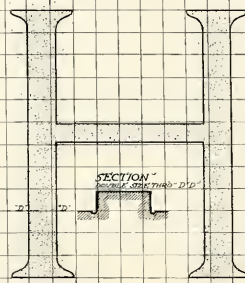


SECTION  
DOUBLE STEP THIRD "B-B"

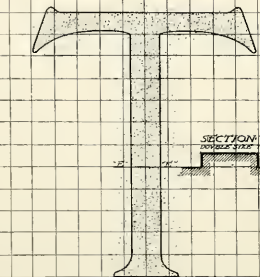
THIS SECTION WILL  
GIVE A SHARP SHOULDER  
FROM "A-A"



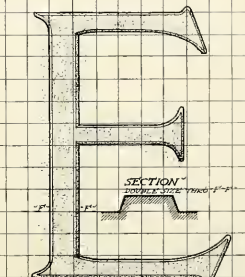
SECTION  
DOUBLE STEP THIRD "C-C"



SECTION  
DOUBLE STEP THIRD "D-D"



SECTION  
DOUBLE STEP THIRD "E-E"

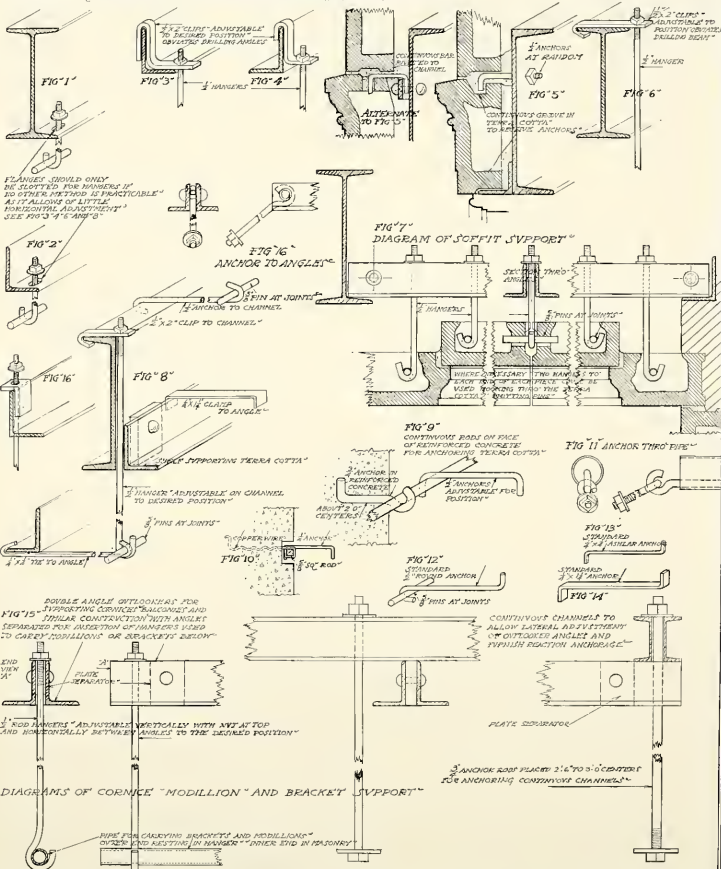


SECTION  
DOUBLE STEP THIRD "F-F"



DETAILS OF ANCHORS, HANGERS, STRAPS, CLAMPS, ETC.  
USED IN SETTING TERRA COTTA.

*"STRUCTURAL STEEL WHEN ERECTED FREQUENTLY VARIES FROM EXACT FIGURED DIMENSIONS" "FOR THIS REASON ALL SUPPORTS FOR TERRA COTTA INCLUDING ANGLES, RODS, ANCHORS, ETC." SHOULD BE DESIGNED SO AS TO PERMIT OF EASY ADJUSTMENT TO THE REASONABLE REQUIREMENTS OF CONSTRUCTION WHEN THE MATERIAL IS BEING SET"*







# Standard Specification for the Manufacture, Furnishing and Setting of Terra Cotta Adopted by NATIONAL TERRA COTTA SOCIETY

NOTE:—The Architect or Specification Writer will find it convenient to follow the Short Form Specification beginning with Section 63.

The Short Form incorporates all the provisions of the Standard Terra Cotta Specification, but eliminates the necessity of mentioning them in detail.

Reference to the Glossary, Sections 50-62, will supply the surface finish, ceramic finish, and color data necessary to specify surface and color correctly.

The Corollary Clauses, Sections 85, 86, explain the setting option between mason and manufacturer.

Sections 87-91 under Corollary Clauses explain the specifications for flashing, sheet metal, structural steel, structural concrete and rough carpentry. These specifications form a part of the Terra Cotta Specifications, although the materials are supplied and set in place by different contracting parties.

## A—GENERAL INFORMATION

### *Drawings and Schedules*

1. The Terra Cotta manufacturer shall be furnished with all drawings, details and other information necessary for the manufacture of Terra Cotta, including drawings for all classes of work with which the Terra Cotta engages.
2. Wherever Terra Cotta is required to match in contour, color, finish and surface treatment, existing Terra Cotta, as for example in connection with alterations or additions to existing work, the Terra Cotta manufacturer shall be furnished with the required profiles and samples of the original work, and other needed information.
3. The Terra Cotta manufacturer shall, before proceeding with manufacture, submit to the architect for his correction and approval, shop drawings showing jointing and construction of the Terra Cotta and provision made for all flashing and counter flashing. These drawings must conform as nearly as practicable to the architect's drawings, but shall be in accordance with good Terra Cotta structural practice.
4. All pieces of Terra Cotta shall be numbered. The Terra Cotta manufacturer shall provide two copies of the completed scale shop drawings to be used for setting and showing the piece numbering of the Terra Cotta, and the size of the joints to be used for setting the various portions of the work clearly indicated. These drawings shall be designated as the setting drawings.
5. The Terra Cotta manufacturer shall furnish, as promptly as possible, a schedule of all special anchors, hangers, etc., necessary to secure and support the Terra Cotta in a manner approved by the architect.

## B—MATERIAL

### *Quality Tests*

6. Note:—In view of the researches now being conducted by the National Bureau of Standards at the instance of the National Terra Cotta Society, it seems inadvisable to attempt, at this time, to write either quality clauses in terms of crushing strengths, densities and elasticity, or specifications for tests. Clauses descriptive of the desirable physical characteristics and of tests to prove compliance of the material with such physical requirements will be prepared as soon as the necessary data are available and inserted in a later edition of this standard specification.

### *Modeling*

7. All ornament shall be artistically modeled by the Terra Cotta manufacturer's staff artists. (Or, models made to Terra Cotta shrinkage scale will be furnished to Terra Cotta manufacturer, without cost to him, securely crated for shipment f. o. b. modelers' studio at      ).
8. Photographs in duplicate of all ornament shall be submitted to the architect for his approval or correction, or, if he so desires, he may inspect all modeling at the factory. Such approval or inspection by the architect shall be made promptly. No ornamental work shall be burned until modeling has been approved.

### *Surface Finish, Ceramic Finish and Color*

9. The surface finish, ceramic finish and color of all exposed surfaces of Terra Cotta shall be as indicated by the architect's drawings or as specified. For surface and ceramic treatments, see Glossary of Terms relating to Terra Cotta, which is hereby made a part of this specification.
10. The ceramic finish shall be applied to the Terra Cotta in such a manner as thoroughly to coat the exposed surfaces.

### *Samples*

11. The Terra Cotta manufacturer shall submit samples of the color or colors of the ceramic finish to the architect for his approval, and all Terra Cotta shall conform without marked variation to the sample or samples approved.



**C—DESIGN AND STRUCTURE**

- |                                     |     |                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Ends, Walls and Partitions</i>   | 12. | Walls shall not be less than one inch thick and partitions shall be of such thickness and so spaced as to perform their proper functions with regard to form and structure. Each piece of Terra Cotta shall be provided with the necessary anchor holes and hand holes and shall be so formed as properly to engage the structure. Beds generally shall be not less than 1" deep. |
| <i>Washes, Weep Holes and Drips</i> | 13. | Projecting courses, cornices and heavy ornamental detail may have washes, drips and weep holes, where shown on the approved shop drawings.                                                                                                                                                                                                                                        |
| <i>Preparation for Flashing</i>     | 14. | Where so shown the washes of all projecting cornices and other exposed horizontal surfaces shall have provision made for flashing. All surfaces where the wash pitches inward toward the structure and stops against superimposed work; all balcony floors, and all gutter grades shall have provision made for flashing.                                                         |
|                                     | 15. | Raggles shall be provided to receive gutter linings and flashings when the joints cannot be used for the purpose. Raggles shall be not less than $\frac{3}{4}$ " deep.                                                                                                                                                                                                            |
|                                     | 16. | All capping courses, copings and sills except of the "slip" type, shall have stools and lugs at intersections with vertical surfaces.                                                                                                                                                                                                                                             |
| <i>Joints</i>                       | 17. | All joints shall be straight and true and of an approximate uniform width of $\frac{1}{4}$ ". All Terra Cotta shall be laid out at the factory to test it for uniformity of joint widths and over-all dimensions. Where necessary to secure accurate dimensions and uniform joint widths, the material shall be sized straight and true.                                          |

**D—TRANSPORTATION, STORAGE AND PROTECTION**

- |                                    |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Shipment, Delivery and Care</i> | 18. | Unless otherwise specifically agreed, all Terra Cotta shall be furnished by the manufacturer f. o. b. curs factory, with freight allowed to destination. All Terra Cotta shall be carefully packed in hay, straw, excelsior or other suitable material.                                                                                                                                                                                                                                                                      |
| <i>Replacements</i>                | 19. | If any pieces of Terra Cotta are damaged in transit, the manufacturer shall be immediately notified in writing by the setting contractor and proceed with the reworking of the pieces. The responsibility for the cost of such replacements shall be determined by the point of delivery fixed by the contract under which the Terra Cotta is delivered. If the point of delivery is beyond the immediate control of the manufacturer, the setting contractor shall assume responsibility for the necessary proof of damage. |

**E—ERECTION**

- |                                            |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Handling</i>                            | 20. | The setting contractor shall receive the Terra Cotta on arrival at the freight yards and shall transfer it without damage from the curs to the building. When the Terra Cotta manufacturer delivers on trucks at the building the setting contractor shall unload and store the Terra Cotta. Terra Cotta shall be stored under cover, not in contact with the ground, stacked without inflammable packing on wood laths or strips, so as to protect it from injury. |
| <i>Mechanics</i>                           | 21. | All Terra Cotta shall be set by mechanics experienced in the handling and setting of the material.                                                                                                                                                                                                                                                                                                                                                                  |
| <i>Cutting and Fitting at the Building</i> | 22. | Notice of errors in the manufacture of the Terra Cotta shall be given to the manufacturer immediately upon discovery. Cutting or fitting due to such errors shall be done by the Terra Cotta manufacturer or shall be paid for by him if he fails to do the necessary cutting or fitting promptly upon receipt of notice.                                                                                                                                           |
|                                            | 23. | Other necessary cutting and fitting of the Terra Cotta that may be required at the building, including all fitting around anchors, steel and iron work and reinforced concrete, shall be done by the contractor for setting Terra Cotta.                                                                                                                                                                                                                            |
| <i>Supporting Metal Work and Anchors</i>   | 24. | <i>In Connection with Structural Steel:</i> Beams, channels, angles, T's, plates and fabricated members for supporting Terra Cotta and which are not secured to the structural steel by rivets or short bolts, as shown on the architect's drawings, together with all anchors, hangers, bolts, clips, straps, rods and pins for securing Terra Cotta, shall be furnished and set by the contractor for setting Terra Cotta.                                        |
|                                            | 25. | <i>In Connection with Structural Concrete:</i> The contractor for structural concrete shall furnish and set all supporting metal work imbedded in the concrete and all shelf angles and continuous rods. All such metal work shall conform to the requirements of the setting drawings prepared by the Terra Cotta manufacturer.                                                                                                                                    |
|                                            | 26. | All other loose iron such as clamps, hangers, clips, straps, and pins shall be furnished and set by the Contractor for setting Terra Cotta.                                                                                                                                                                                                                                                                                                                         |
|                                            | 27. | All anchors, hangers, bolts, clips, straps, rods and pins for securing Terra Cotta shall be of wrought iron or non-corroding soft steel.                                                                                                                                                                                                                                                                                                                            |
|                                            | 28. | Anchors, hangers, bolts, clips, straps, rods and pins for securing the Terra Cotta, except where otherwise shown or specified, shall be of the following minimum sizes:                                                                                                                                                                                                                                                                                             |



# \* \* \* \* \* TERRA COTTA \* STANDARD CONSTRUCTION \* \* \* \* \*

29. Anchors:—(a) For ashlar or courses balanced on the wall, shall be  $\frac{1}{4}$ " x  $\frac{1}{4}$ " or  $\frac{1}{8}$ " x  $\frac{5}{8}$ ", or No. 6 gauge galvanized wire.
30. (b) For projecting courses not balanced on the wall, shall be not less than  $\frac{5}{8}$ " round or square bars of equal cross section.
31. Hangers shall be  $\frac{5}{8}$ " diameter round bars or other shapes of equal cross section area.
32. Clips and straps shall be  $\frac{3}{8}$ " x 2".
33. Pins shall be  $\frac{1}{2}$ " diameter round bars.
34. Continuous rods on concrete wall faces to which Terra Cotta ashlar is clipped, shall be  $\frac{5}{8}$ " diameter round bars which shall be secured to the masonry with  $\frac{1}{2}$ " diameter round anchors placed not more than 2' 0" on centers.
35. All steel or iron supporting metal work shall be clean and thoroughly protected with two coats of pure red lead and linseed oil paint, asphaltum applied hot, or other approved protective compound.

## *Protection of Supporting Metal Work*

36. Metal work of every description, supporting Terra Cotta, shall be imbedded thoroughly in the masonry backing and when not so imbedded, metal work shall be protected against corrosion by encasing with cement mortar or in cement mortar masonry.
37. When the back of a Terra Cotta course comes in contact with iron or structural concrete in such manner as to prevent the encasing of supporting iron from the rear, an opening shall be made in the top to admit of the placing of the encasing mortar as required above.

## *Mortar*

38. All cement used for setting mortar shall be of a standard brand of Portland cement fulfilling the requirements both physical and chemical of the standard specifications for Portland cement adopted by the American Society for Testing Materials.
39. All sand used for setting mortar shall be clean, sharp and well graded in size.
40. All mortar for setting and pointing shall be composed of one volume of Portland cement to three volumes of sand. Hydrated lime, not to exceed 9 pounds to the sack of cement, shall be added.
41. The sand and cement and lime, if any, shall be thoroughly mixed dry before any water is added. The use of retempered mortar shall not be permitted.

## *Setting*

42. All Terra Cotta shall be set true to a line and carefully laid in a solid bed of mortar. All rebates in bed and cross joints from front to back and top to bottom, shall be filled solid with mortar leaving no voids. Each piece of Terra Cotta shall be tamped into place, excess mortar cut off and struck with a jointer or trowel. All sills, wall copings and other capping courses, shall be set in a thick bed of mortar and well pounded down so that the mortar fills all spaces around bottom of webs of Terra Cotta.
43. All Terra Cotta projecting courses shall be so set that the arris casting a shadow shall be true to line.
44. When the Terra Cotta work is of such scope or character that the proper handling and setting of the Terra Cotta require special skill and knowledge, the Terra Cotta manufacturer shall, if required by the contract, furnish a competent Terra Cotta setter to assist in the sorting, selecting and handling of the Terra Cotta, to co-operate with the setting contractor, to assist him when cutting or fitting of the Terra Cotta is necessary, to advise as to interpretation of setting drawings and to help generally in securing rapid, efficient progress during the setting of the Terra Cotta. For such service the setting contractor shall pay such setter full time at his regular wage rate. When the furnishing of such a competent setter involves traveling expenses, the setting contractor shall pay the same and also make an allowance for his board.
45. When the services of such a competent setter are not required under the contract, the Terra Cotta manufacturer may, at his own option and expense, send such a representative to the work who shall perform the above services, and the setting contractor shall co-operate with and aid and facilitate the performance of such services by such representative.

## *Pointing*

46. All joints in Terra Cotta shall be pointed and struck as the setting progresses except in freezing weather. In freezing weather and when re-pointing is necessary, all joints shall be raked or cut out to a depth of  $\frac{1}{2}$ " and the pointing mortar driven into the joint and struck with a jointing tool.
47. All joints in overhanging Terra Cotta, balustrades, parapets and free standing features shall have joints raked out one-half ( $\frac{1}{2}$ ) inch, and pointed with an approved elastic cement.

## *Protection*

48. All uncompleted walls including Terra Cotta and backing shall be protected by waterproof covering at night and at any time when liable to injury from storms or freezing. (Note:—All other protection required for projecting courses, jambs of openings, etc., is provided for under the work of other trades.)



- Cleaning Down* 49. Upon completion of the work, mason's wedges, shoring, supports and centering and all other false work and protections shall be removed and the Terra Cotta cleaned down. If satisfactory results cannot be obtained by the use of abrasive soap or washing powder, a solution consisting of  $1\frac{1}{2}$  pints of muriatic acid to a gallon of water may be used. In the use of acid solutions only wooden pails and fibre brushes shall be employed.

### *Glossary of Terms Relating to Terra Cotta*

- Surface Finish* 50. Surface Finish designates the texture of the surface of the clay body prior to application of Ceramic Finish.
51. It may be:
- (a) *Smooth.*
  - (b) *Tooled or Drace.*
    - (b1) Eight lines to the inch.
    - (b2) Six lines to the inch.
  - (c) *Light irregular drag or combing.*
  - (d) *Heavy irregular drag or combing.*
  - (e) *Special.*
52. A special Surface Finish like "hush-hammered," "pitted," "vermiculated," etc., involves extra expense and, if required, should be clearly specified.
53. *Surface Finish for unglazed surfaces* may be smooth or may be tooled with a light or heavy drag. Flat surfaces of sufficient width may be tooled, while the curved surfaces of mouldings may be left smooth.
- Surface Finish for glazed Ceramic Finish* (whether lustrous or mat) is usually made smooth.
54. *Granite Colors*, if unglazed, may be made smooth or with irregular drag, or pitted. A hush-hammered or special surface involves extra expense, and if required should be clearly specified. If glazed Ceramic Finish is used for Granite Colors the surface treatment is usually smooth.
- Ceramic Finish and Color* 55. Ceramic Finish designates the surface and color applied by the ceramic processes of coating, glazing, burning, etc.
56. (1) *Unglazed Terra Cotta:* Terra Cotta with a Ceramic Finish producing an unglazed finish made in various shades of buff, gray, salmon, red and brown. Most colors thus made are vitreous.
57. (2) *Glazed or Enameled Terra Cotta:* Terra Cotta having an impervious Ceramic Finish of a glassy texture which may be either lustrous or mat (sometimes designated as full or dull glazes or enamels) made in various colors.
58. (3) *Granite Color Terra Cotta:*
- (a) *Unglazed Granite Color:*—A mottled Ceramic Finish similar to unpolished granite.
  - (b) *Glazed or Enameled Granite Color:*—A mottled Ceramic Finish similar to polished granite, made either lustrous or mat.
59. (4) *Polychrome Terra Cotta or Faience:* Terra Cotta having two or more colors on the same piece.
- (a) *Polychrome, unglazed:*—Unglazed Terra Cotta having two or more colors on the same piece.
  - (b) *Polychrome, glazed:*—Glazed Terra Cotta having two or more colors on the same piece.
  - (c) *Polychrome, blended colors:*—Made only in glazed Terra Cotta. If, in polychrome glazed work, the colors are not to be separated by definite lines or contours of ornaments, but are to be blended together by brush treatment, or the like, the term "Polychrome, blended colors" shall be used. The character of work expected should be explicitly described.
- (Note:—For polychrome work always clearly specify the work to be done and the number of colors on a single piece.)
60. (5) *Special:* There are a number of Ceramic Finishes used by individual manufacturers the processes for which are patented or the names copyrighted which are not included in this Glossary.
61. (6) *Semi-Glaze:* An ambiguous term which should never be used.
62. (7) *Fire-Gilding:* A coating of gold glaze, either mat or lustrous, fixed by an additional burning (The area of surface to be gilded should be clearly described.)





## Short Form Specification

for

### The Manufacture, Furnishing and Setting of Terra Cotta

For Incorporation in the Architect's Specifications

To be used in connection with Standard Specifications and the Standard General  
Conditions of the American Institute of Architects.

63. (Note to architect:—The Standard Specification does not state who shall set the Terra Cotta, who shall provide wood centering, scaffolding, hoists, cover boards and protection (except tops of walls against weather). It does not include any cement or concrete work in connection with forming gutter grades and washes on projecting courses and features, or the furnishing or setting of sheet metal flashings and gutter linings. It does not include the furnishing and erection of metal supporting members which are riveted or bolted with short bolts to the structural steel or structural concrete. It requires the architect to show on his drawings the sizes and arrangement of rolled or fabricated structural shapes used for supporting Terra Cotta. (See notes on corollary clauses at end of this specification for the work of other trades to take care of such omissions.)

#### GENERAL CONDITIONS

- |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <p>Work<br/>Included</p> <p>Work Not<br/>Included</p> | <p>64. The general conditions of the American Institute of Architects, Third Edition, shall form a part of this specification and contract and all work shall be subject to the provisions thereof.</p> <p>65. The work included in the contract comprises the manufacture, (and) delivery (and setting) of all Terra Cotta in accordance with the contract drawings and these specifications.</p> <p>66. All (here insert a complete description of work) shall be of Terra Cotta.</p> <p>67. The following items are not included as a part of the contract for furnishing (and setting) Terra Cotta.</p> <p style="margin-left: 20px;">(a) Masonry backing. See specifications for (.....).</p> <p style="margin-left: 20px;">(b) The furnishing and erection of metal supporting members which are riveted or bolted with short bolts to the structural steel. See specifications for (.....).</p> <p style="margin-left: 20px;">(c) Cement or concrete grading for gutters, washes, floors, etc. See specifications for (.....).</p> <p style="margin-left: 20px;">(d) Furnishing and setting sheet metal. See specifications for (.....).</p> |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### MATERIALS AND WORKMANSHIP

- |                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <p>Surface Finish,<br/>Ceramic Finish<br/>and Color</p> | <p>68. All Terra Cotta work under this contract, except as hereinafter specified, shall be executed in strict conformity with the Standard Specification for the Manufacture, Furnishing and Setting of Terra Cotta, adopted by the National Terra Cotta Society; which Standard Specification is hereby declared and made a part of this specification with the same force and effect as if written herein in full.</p> <p>69. All Terra Cotta (Note:—If several textures or finishes are to be used give location of each) shall be</p> <p>70. (1) <i>Unglazed:</i><br/>                 Surface Finish of flat members shall be<br/>                 (a) <i>Smooth.</i><br/>                 (b) <i>Tooled or Dressed.</i><br/>                     (b1) Eight lines to the inch.<br/>                     (b2) Six lines to the inch.<br/>                 (c) <i>Light irregular drag or combed.</i><br/>                 (d) <i>Heavy irregular drag or combed.</i><br/>                 (e) <i>Special.</i> (Note:—Special surface finishes like "hush-hammered," "pitted," "vermiculated," etc., should be described.)</p> <p>71. The surface finishes of mouldings and curved surfaces generally shall be<br/>                 (Note:—Unless otherwise specified these surfaces are generally made smooth.)</p> <p>72. (2) <i>Unglazed Granite Colors:</i> Surface finishes of flat members generally shall be (a, b, c, d, e).<br/>                 The surface finish of mouldings and curved surfaces generally shall be<br/>                 (Note:—Unless otherwise specified these surfaces are generally made smooth.)</p> <p>73. (3) <i>Lustrous or Full Glazed or Enameled:</i> Surface finish shall be<br/>                 (Note:—Unless otherwise specified these surfaces are generally made smooth.)</p> <p>74. (4) <i>Mat or Dull Glazed or Enameled:</i> Surface finish shall be (See Note 3).</p> |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



75. (5) *Lustrous or Full Glazed or Enameled Granite*: Surface finish shall be (See Note 3).
76. (6) *Mat or Dull Glazed Enameled Granite*: Surface finish shall be (See Note 3).
77. The color of the Terra Cotta generally shall be (.....) as per approved sample or samples.
78. (7) The Terra Cotta comprising (....) described here in detail (....) shall be (two, three, four) color polychrome. Colors (....) specify where (....) shall be blended.
79. (8) The surface finishes of (....) specify where (....) shall be fire gilded with (mat or lustrous) gold glaze.  
(Note:—Sections 1, 2, 3, 4, 5, 6, are alternates. If there is no polychrome work or no fire gilding omit sections 7 and 8. Sections a, b, c, d, e, are alternates for surface finish.)
- Delivery* 80. The Terra Cotta manufacturer shall furnish and deliver (f. o. b. cars factory with freight allowed to destination) (on trucks at the site of the building) (and set) all the Terra Cotta as indicated on the drawings or as here described.
- Selling* 81. All Terra Cotta shall be set by the (Terra Cotta manufacturer), (mason, ....). For such anchors and metal work as are to be furnished by the setting contractor see Standard Specification.  
(Note to architect:—If the Terra Cotta manufacturer is to set his material include the following clause in the Terra Cotta specification. See also suggested clauses at end of this specification to take care of these omissions and for incorporation in the specifications for the work of other trades.)
82. "Hoisting service, storage space, setting mortar delivered on the scaffold, outside and inside scaffolds, runways and platforms, water, temporary light and removal of refuse, shall be furnished to the Terra Cotta manufacturer free of charge by the (....) mason contractor (....)."  
(Note to architect:—If the work is of such scope or character that the proper handling and setting requires special skill, the following clause may be inserted: "The Terra Cotta manufacturer shall furnish at the expense of the setting contractor a competent Terra Cotta setter to assist in the sorting, selecting, handling and setting of the Terra Cotta.")
- Terra Cotta Seller*
- Joints* 83. (The Standard Specification does not require any joints to be rubbed. If rubbed joints are to be required it should be so stated here.)
84. (The Standard Specification requires all joints to be approximately  $\frac{1}{4}$ " wide. If joints of a different width are desired it should be so stated here.)

### *Suggestions for Corollary Clauses*

85. 1.—If the Terra Cotta is to be set by the Terra Cotta manufacturer, a clause similar in purport to the following should be included in the general requirements relating to masonry or brick work:
86. "Terra Cotta will be furnished and set by the Terra Cotta manufacturer. Hoisting service, storage space, setting mortar delivered on the scaffold, outside and inside scaffolds, runways and platforms, water, temporary light and removal of refuse shall be furnished to the Terra Cotta manufacturer, free of charge, by the (mason contractor)." A provision should also be included to the effect that the (mason contractor) shall construct the brick (concrete) backing for the Terra Cotta and "The backing shall proceed simultaneously with the setting of Terra Cotta. Each piece of Terra Cotta shall be backed up solid with brick and mortar, so as to make a perfect bond and homogeneous mass between wall lines. This backing shall extend beyond the wall line when necessary to structural stability. If concrete is used it shall not be stronger than a 1 to 9 mixture."  
Also a provision under which the (mason) contractor shall place all concrete or cement grading for gutters, washes and balcony, loggia or other floors.
87. In the case of parapet walls specifications should state that flashing if used shall be carried through the wall, or if flashing be not used the back of the parapet wall shall be damp-proofed and the water-proofing carried through the wall.
88. 2.—In the specifications for sheet metal work there should be included a clause similar in purport to the following:  
"The washes on all cornices and other exposed surfaces, where shown or specified, shall be covered with (.....) which shall be turned up against vertical surfaces (cap flashed) and cemented into the raggles provided for the purpose in the Terra Cotta."



89. 3.—Structural Supports.  
Under "Structural Steel," a clause similar in purport to the following should be included: "Beams, channels, angles, T's, plates and fabricated members for supporting Terra Cotta, and which are secured to the structural steel with short bolts or rivets, shall be furnished and erected by the contractor for (structural steel)."
90. Under "Structural Concrete" a clause similar in purport to the following should be included: "Steel beams, channels, angles, T's, plates, fabricated brackets and outlookers and other members, bolts, rods, wires, anchors, and sleeves for supporting Terra Cotta, which are imbedded in the structural concrete, also shelf angles and continuous rods attached to structural concrete shall be furnished and set by the contractor for structural concrete, in strict accordance with setting drawings prepared by the Terra Cotta manufacturer." (For information as to the sizes and character of bolts, rods, anchors, etc., see section E paragraphs 24 to 35 inclusive on "Supporting Metal Work and Anchors" of Standard Specification for the Manufacture, Furnishing and Setting of Terra Cotta. Such supports should be clearly shown on the drawings.)
91. 4.—Under "Rough Carpentry" or other suitable division of work, there should be included a clause providing that the contractor shall furnish, set and maintain all centering, cover boards, boxing and protection for Terra Cotta, and remove the same upon completion of the work.









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